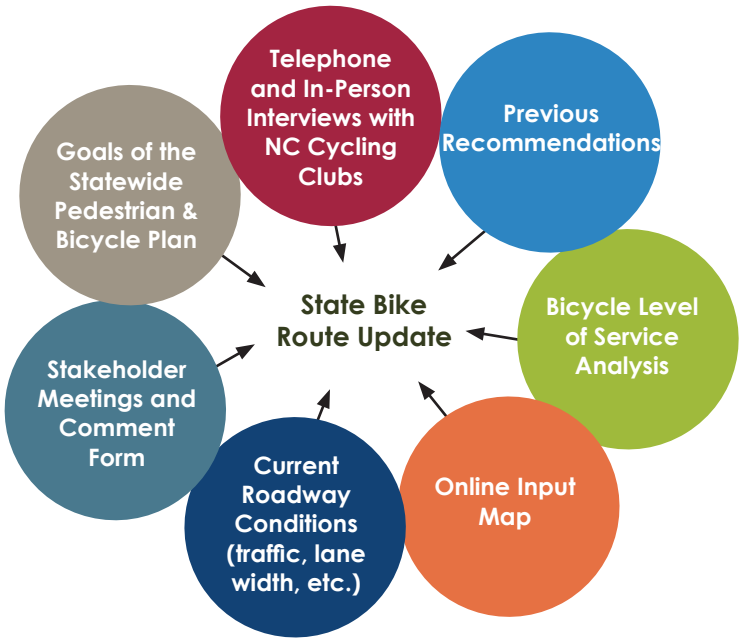
9.3 State Bike Routes

Orange County, NC

THE STATE BIKE ROUTE SYSTEM UPDATE

North Carolina's bicycle route system was developed in response to the 1974 Bicycle and Bikeway Act. The system located those roads across North Carolina that were safer for bicycling, designating a network of ''Bicycling Highways'' that provided access to small towns, state parks, historic sites, and other points of interest. The system also included the first interstate route that was approved by AASHTO in 1982, US Bike Route 1. The current network consists of nine different routes covering 2,400 miles. The 700+ mile NC 2 Mountains to Sea route is the main artery of the system, connecting east and west as well as most of the system's other routes. Bicycle tourists and adventurers use maps created for each route to navigate the state.

Given the extensive development that has occurred across North Carolina since the 1970's and associated changes to the roadway network, NCDOT recognized the need to re-evaluate and update the state bike route system as part of this 2013 plan. The following chapter summarizes the results of this evaluation, which was completed with an extensive stakeholder and public outreach process. The figure below details the many inputs used during that process. A quantitative, data-driven analysis was combined with qualitative, stakeholder-driven input to ensure a complete evaluation.



In this Chapter

Stakeholder input

Several themes emerged through the stakeholder and public input process, which helped to frame the goals of this plan and inform its recommendations. At the beginning of the process, over 150 key stakeholders including bike club members, bike tour operators, and cycling enthusiasts were reached through an initial comment form. Based on the results of that form, an online input map was used to gather localized feedback on existing route conditions, key destinations, and potential new routes. The map also reached 150 stakeholders and received over 130 unique comments. Beyond these strategies, additional feedback was provided through extensive emails and meetings with local planners and route experts. At least X groups and individuals were reached through this direct approach.

A selection of recurring comments and the major themes they address are summarized below:

Re-route where development has changed the character of the existing routes

"Some…pieces are now on roads that are unsafe due to development and traffic volume"

"Many were nice rural roads 20 years ago, and have become high-traffic bottleneck roads now"

"Beauty of scenery along the route is very important"

Routes should include bicycle facilities

"There is a widespread lack of shoulders on these roads"

"More riding room on the side of the road"

"Provide consistency and minimum improvements/ safety feature standards to roads marked as 'bike routes'"

"Routes…exhibit only signage, and no genuine improvements to ensure cyclist safety and consistency; ie. lack of shoulders, damaged shoulders, traffic signals inoperable by bicycles, lack of proper turning lanes"

Routes should connect major cities in North Carolina

"Link towns and cities with bike routes instead of avoiding them"

"Better routes through/around urban areas"

"More (routes) that would actually connect Point-A with Point-B with the idea that distance cycling between cities would be an actual way to travel"

Ensure routes link to necessary amenities

"Many routes are down rural roads that….have few places to stop for food/drink"

"Start routes near parking areas"

Routes should be clearly marked for both cyclists and motorists, and easy to follow

"They are sometimes not well marked…"

"Please consider using larger bike route signs in those places where very small signs (or very few) are used"

"Not well advertised"

Route information should be easy to access, up to date, and available online

"The last time I tried to look at the online routes, several years ago, those were not easy to get to or look at with accurate up to date maps"

"Offer downloadable maps, cue sheets, GPS files"

"High quality maps need to be available for these routes to be more readily used"

"A website with maps and information"

Project Goals

The goals identified for the 2013 system were built upon the input received before and during this planning process as well as the broader goals for the Statewide Plan. These goals, which supplement the system's original goals, are summarized below:

State Bike Routes Today

Route Descriptions

The nine routes of the existing statewide bicycle route system are summarized on the following pages.

1975 System Goals

- Low Traffic Volumes
- Low Speed Limits
- Good surface conditions
- Wide lanes or shoulders
- Minimal grade and curvature
- Connect to points of interest
- Connect to services

2013 System Goals

- Provide suitable roadway conditions: traffic volumes, speed limits, surface, lane width, shoulder width, grade, and curvature
- Connect to points of interest and services
- Connect major urban centers
- Link the system to state parks and other significant tourism attractions

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- Integrate the system into regional and local route networks
- Provide detailed, easy-to-access online route information
- Provide highly visible signage and wayfinding to routes and along routes
- Coordinate with other state and national bike route systems

NC 2 – MOUNTAINS TO SEA

The 700+ mile NC 2 Mountains to Sea route serves as the main artery of the North Carolina bicycle route system, bisecting the state west to east. It ties the mountains in the west with the piedmont in the center; and the piedmont with the coastal region of the east. While traversing the rugged mountains, rolling pastures of piedmont farm country, and the flats of the coastal region, it connects many of North Carolina's larger cities including Asheville, Winston-Salem, Greensboro, Durham, and Raleigh. The route begins in Murphy in the mountainous southwestern corner of the state and finishes in Manteo at the Outer Banks in the east.

US 1 - CAROLINA CONNECTOR

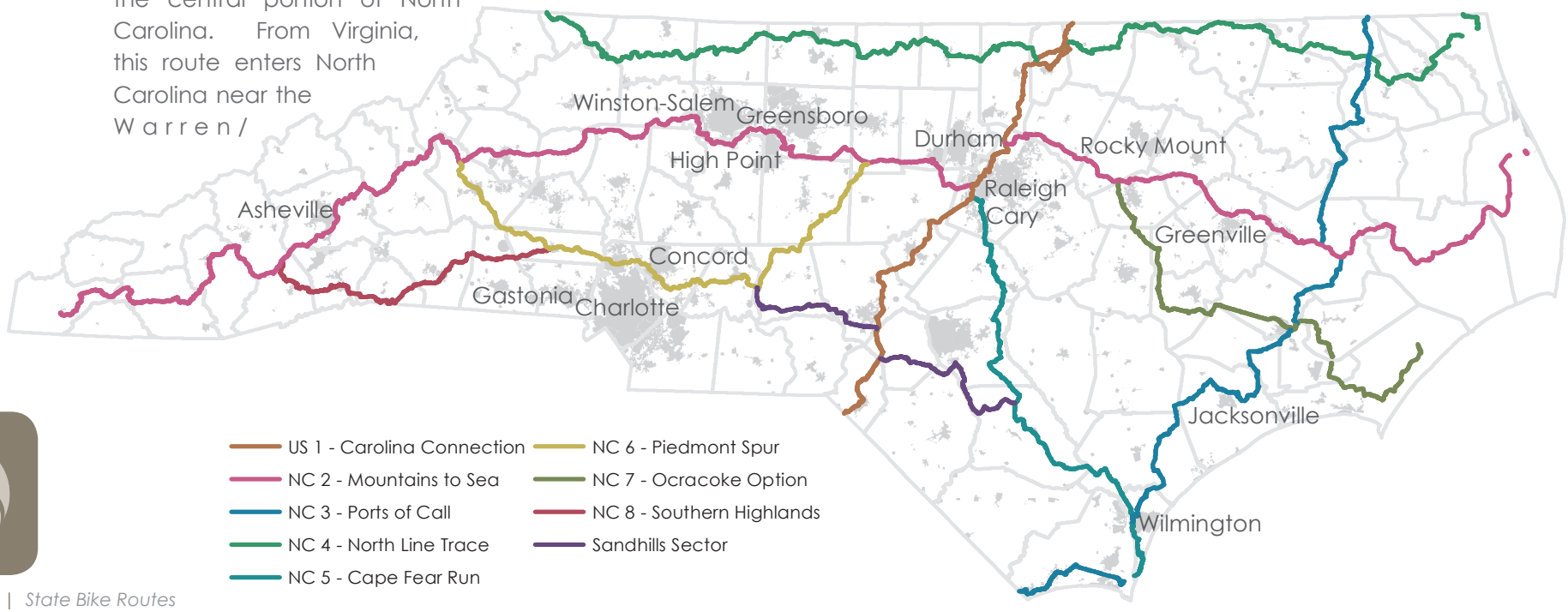
Designated as a portion of US Bike Route 1, which runs from Maine to Florida, this route covers almost 200 miles of rolling terrain. It is the main north/south connector route through the central portion of North Carolina. From Virginia, this route enters North Carolina near the Warren/Vance County border. US 1 continues south between Raleigh and Durham and eventually through Sanford, Southern Pines, and Laurinburg before advancing into South Carolina.

NC 3 - PORTS OF CALL

This route traverses North Carolina's long and varied coastline including two major sounds - the Pamlico and Albemarle Sounds. The ~300 mile route from Virginia to South Carolina passes through the major ports of the colonial era; Edenton, Bath, New Bern, Wilmington, and Southport among numerous other coastal communities.

NC 4 - NORTH LINE TRACE

Running east/west from the mountains to the coast, this ~400 mile route runs just south of and parallel to North Carolina's border with Virginia. It travels through or near numerous small towns including (from west to east) Eden, Roxboro, Henderson, Roanoke Rapids, and Elizabeth City.



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NC 5 - CAPE FEAR RUN

This 160 mile route roughly parallels the course of the Cape Fear River through the southeast coastal plain to the coast. Rolling hills give way to flat land in the swamps and Carolina bays typical of this region of the state. Just south of the Triangle, NC 5 begins at its connection with US 1 in Apex, continuing through Fuquay-Varina, passing near Fayetteville, and ending in Wilmington at its intersection with the NC 3 Ports of Call route.

NC 6 - PIEDMONT SPUR

The NC 6 Piedmont Spur is a ~200 mile route that is a southern alternate to the piedmont portion of the NC 2 Mountains to Sea route. The western endpoint of NC 6 is located in the foothills of the Blue Ridge Mountains west of Lenoir and Morganton in Burke County before making its way southeast toward Charlotte. The route stays north of Charlotte, turning northeast to its reconnection with NC 2 in central North Carolina. It passes through smaller towns such as Morganton, Lincolnton, several Charlotte suburbs, and Albemarle before eventually finishing near Snow Camp.

NC 7 - OCRACOKE OPTION

From its western terminus along the NC 2 Mountains to Sea route near Wilson, this ~170 mile route winds its way through the coastal plain to the Cedar Island Ferry over to Ocracoke. It passes through or near several smaller towns including Wilson, Goldsboro, Kinston, New Bern, and eventually Ocracoke.

NC 8 - SOUTHERN HIGHLANDS

This ~120 mile route begins northwest of Brevard with a 15-mile downhill from its connection with NC 2 Mountains to Sea on the Blue Ridge Parkwaw, passing through small mountain towns such as Brevard, Saluda, Flat Rock, and Tryon. It traverses the foothills of the Blue Ridge Mountains southeast toward the South Carolina border before turning northeast through Forest City and finishing at its intersection with the NC 6 Piedmont Spur in Lincolnton.

SANDHILLS SECTOR

The western terminus of the Sandhills Sector is its connection with the NC 6 Piedmont Spur near the Pee Dee River and the town of Albemarle. Ending near the Cape Fear River at its connection with the NC 5 Cape Fear Run, this route traverses ~125 miles of sandhills terrain characterized by rolling topography rising from 500 to 700 feet above sea level. The Sandhills Sector passes near Pinehurst/Southern Pines and meanders south of Fayetteville.

Scenic Byways

The N.C. Department of Transportation has designated 54 scenic byways from one to 173 miles long around the state. Scenic byways are typically rural roadways that give visitors and residents a chance to experience North Carolina history, geography, and culture while raising awareness for the preservation and protection of scenic landscapes. They provide an alternative to the highways and interstates filled with high-speed traffic and surrounded by commercial areas.[1]

Scenic byways currently overlap the state bicycle route system in a handful of locations. While the state bicycle route system extends continuously across North Carolina, scenic byways are generally discontinuous routes that function as destinations. Both systems highlight the dynamic geographies of North Carolina, seeking pleasant, low-traffic roads.

Where North Carolina's scenic byways and state bicycle routes overlap, opportunities exist to pool resources for roadway and bicycle facility improvements. Roadway additions like paved shoulders provide separated space for cyclists and reduce the frequency of required roadway maintenance. Where scenic byways are located away from the state bicycle route system, these roads should be incorporated into county or local bicycle route planning.

*North Carolina Department of Transportation. http://www.ncdot.gov/travel/scenic/default.html.

Route Conditions

While significant portions of the state route system remain comfortable and scenic, many of the roads have changed since their designation and are no longer ideal for bicycling. In addition, many miles of roadway around the state have been paved since the 70's and now hold potential to become part of the route system. The tables below summarize several of the key roadway characteristics of the routes in 2012. While all shown data has a degree of error, this information provides an overview of conditions today and allows for comparison between routes.

TRAFFIC VOLUMES

Traffic volumes on some segments far exceed the original goal for the system of average daily traffic (ADT) less than 1,200 and make cycling uncomfortable even where paved shoulders exist. At the same time, over half of the current system does still hold less than 3,000 ADT, a comfortable level for most cyclists, particularly when a shoulder is present.

PAVED SHOULDER

Only six percent of the current system has a paved shoulder equal to or greater than three feet. The route with the largest percentage of paved shoulder, NC-5 Cape Fear Run, still only contains a three foot paved shoulder on 18.5% of roads.

Route	< 3'	3' - 4'	> 5'	No Data
US 1 - Carolina Connection	97%	2%	0.1%	0.9%
NC 2 - Mountains to Sea	90%	7%	3%	0.4%
NC 3 - Ports of Call	94%	4%	1%	0.4%
NC 4 - North Line Trace	98%	2%	0.02%	0.0%
NC 5 - Cape Fear Run	81%	18%	0.5%	0.3%
NC 6 - Piedmont Spur	95%	4%	1%	0.2%
NC 7 - Ocracoke Option	93%	6%	0.2%	0.2%
NC 8 - Southern Highlands	99%	1%	0.1%	0.03%
Sandhills Sector	98%	2%	1%	0.01%
Grand Total	93%	5%	1%	0.3%

NC Bicycle Route Paved Shoulder Width (as a percentage of route mileage)

NC Bicycle Route Annual Average Daily Traffic (as a percentage of route mileage)

Route	<= 1,200	1,200-3,000	3,000 - 5,000	5,000 - 10,000	10,000 - 15,000	15,000 - 25,000	25,000 - 50,000	50,000 - 75,000	75,000 - 150,000	No Data
US 1 - Carolina Connection	20%	29%	12%	5%	3%	2%	1%	0%	0.002%	29%
NC 2 - Mountains to Sea	33%	33%	13%	8%	2%	3%	0.2%	0%	0%	7%
NC 3 - Ports of Call	22%	16%	12%	15%	5%	3%	0.3%	0.001%	0%	28%
NC 4 - North Line Trace	26%	29%	11%	6%	2%	0.4%	0%	0%	0%	26%
NC 5 - Cape Fear Run	34%	23%	10%	13%	6%	5%	0.01%	0%	0%	11%
NC 6 - Piedmont Spur	22%	9%	6%	16%	9%	4%	1%	0%	0%	33%
NC 7 - Ocracoke Option	19%	29%	13%	12%	3%	4%	1%	0.04%	0%	19%
NC 8 - Southern Highlands	33%	28%	11%	5%	1%	0%	0%	0%	0%	22%
Sandhills Sector	19%	32%	12%	7%	1%	2%	0%	0%	0%	27%
Grand Total	26%	26%	11%	9%	3%	3%	0.4%	0.003%	0.0002%	20%

SPEED LIMITS

A large percentage of the current bike route system is on roadways with a speed limit of 55mph. Where traffic levels are below 1,200 ADT, these roadways still meet the original criteria established when the system was developed, but where traffic has increased such speeds are problematic for cyclists.

Route	<= 25	30 - 35	40 - 45	50 - 55	60 - 70	No Data
US 1 - Carolina Connection	0.3%	12%	29%	56%	0.1%	3%
NC 2 - Mountains to Sea	1%	8%	13%	59%	0.001%	18%
NC 3 - Ports of Call	0.1%	8%	12%	79%	0.003%	1%
NC 4 - North Line Trace	3%	6%	9%	81%	0.002%	1%
NC 5 - Cape Fear Run	1%	9%	8%	78%	0.01%	4%
NC 6 - Piedmont Spur	1%	8%	19%	72%	0%	0%
NC 7 - Ocracoke Option	1%	8%	17%	75%	0%	0.004%
NC 8 - Southern Highlands	3%	14%	20%	62%	0%	1%
Sandhills Sector	1%	5%	6%	88%	0.003%	0.001%
Grand Total	1%	8%	14%	70%	0.01%	6%

▲ *NC Bicycle Route Speed Limits (as a percentage of route mileage)*

SURFACE CONDITIONS

Almost two-thirds of the current route system lie on roads with high pavement condition ratings. A small percentage, however, are on roads with a rating below 50/100. Roadways with a low-quality surface can cause discomfort or flat tires for cyclists and are less enjoyable for long rides.

Route	0 - 25	25 - 50	50 - 75	75 - 100	No Data
US 1 - Carolina Connection	0.04%	3%	21%	73%	3%
NC 2 - Mountains to Sea	2%	6%	19%	54%	19%
NC 3 - Ports of Call	6%	16%	26%	52%	1%
NC 4 - North Line Trace	1%	6%	25%	67%	1%
NC 5 - Cape Fear Run	1%	10%	24%	61%	4%
NC 6 - Piedmont Spur	1%	7%	22%	70%	0.003%
NC 7 - Ocracoke Option	3%	5%	35%	57%	0.01%
NC 8 - Southern Highlands	0%	8%	30%	62%	1%
Sandhills Sector	1%	4%	14%	81%	0.003%
Grand Total	2%	7%	23%	61%	6%

◀ *NC Bicycle Route Pavement Condition Rating (as a percentage of route mileage)*

LANE WIDTH

Almost a quarter of the current routes lie on narrow roadways with 9' wide lanes or less. These roadways can be comfortable for cycling where traffic volumes are very low, but are uncomfortable when motorists pass closely in the case where no additional shoulder exists. The majority of the routes with 10' to 11' lanes can similarly present a problem when no additional shoulder exists.

Route	<= 9'	10' - 11'	12' - 14'	15' - 17'	> 17'
US 1 - Carolina Connection	27%	53%	18%	1%	0.1%
NC 2 - Mountains to Sea	16%	43%	39%	1%	1%
NC 3 - Ports of Call	17%	51%	31%	1%	1%
NC 4 - North Line Trace	25%	51%	22%	1%	1%
NC 5 - Cape Fear Run	13%	57%	27%	1%	2%
NC 6 - Piedmont Spur	25%	52%	21%	0.5%	1%
NC 7 - Ocracoke Option	17%	36%	47%	0%	1%
NC 8 - Southern Highlands	32%	56%	10%	2%	1%
Sandhills Sector	25%	42%	30%	2%	2%
Grand Total	21%	48%	30%	1%	1%

NC Bicycle Route Lane Widths (as a percentage of route mileage)

NC Bicycle Route Level of Service (as a percentage of route mileage)

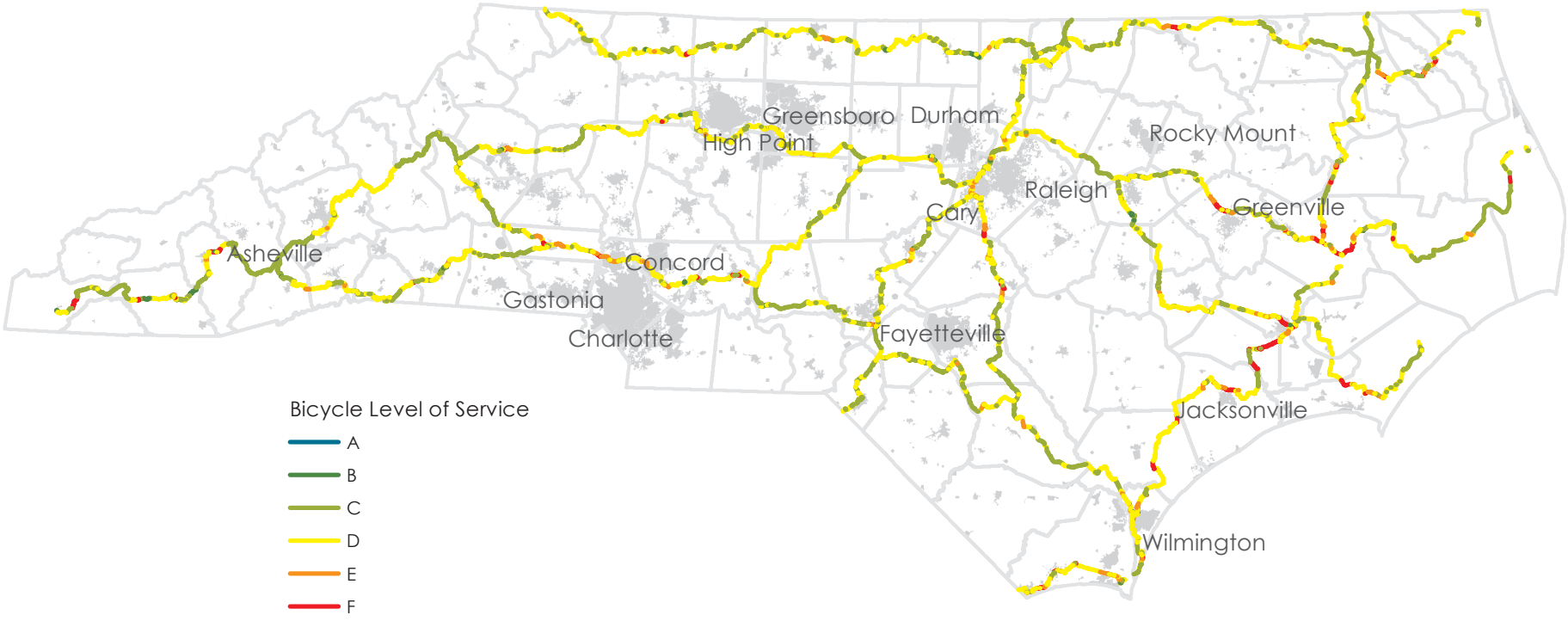
Route	B	C	D	E	F
US 1 - Carolina Connection	0.2%	41%	53%	5%	1%
NC 2 - Mountains to Sea	1%	39%	48%	6%	6%
NC 3 - Ports of Call	0.1%	21%	57%	10%	13%
NC 4 - North Line Trace	1%	31%	58%	4%	5%
NC 5 - Cape Fear Run	0%	37%	48%	10%	4%
NC 6 - Piedmont Spur	1%	19%	62%	13%	5%
NC 7 - Ocracoke Option	1%	22%	62%	8%	7%
NC 8 - Southern Highlands	1%	44%	49%	5%	2%
Sandhills Sector	0.1%	46%	46%	5%	3%
Total	1%	33%	53%	7%	6%

COMPREHENSIVE LEVEL OF SERVICE

The previous tables provide a snapshot of roadway conditions along the state routes, but do not provide a comprehensive picture of quality since the optimal level of each characteristic depends on the state of the others. The following level of service analysis provides an integrated picture of the quality of the routes. Levels of service were calculated for route segments based on a combination of each segment's roadway characteristics using available data.[1] Where data gaps existed, median values were assumed.

The following below and table at left detail the comparative level of service results for each segment. While data limitations prevent accurate comparison of service levels shown here to those calculated elsewhere[2], the LOS findings allow intra- and inter-route comparison within the system.

NC Bicycle Route Level of Service



Route Connections

Just as many roadways across North Carolina have changed over the last several decades, towns and cities have transformed. These changes warrant the consideration of new connections and additions to the state bike route system. One of the major themes of stakeholder feedback was the need for connections into cities. In addition, the development and increasing popularity of routes in neighboring states and in larger systems like the East Coast Greenway present opportunities for interstate connections. The following list details the major additional connections recommended.

THE VIRGINIA CREEPER TRAIL

NC 4's current western terminus at the Virginia border in the northwestern part of North Carolina lies approximately 25 miles from the Virginia Creeper Trail's eastern extent. The Virginia Creeper Trail is one of the most popular rail-trails on the east coast, running 34 miles through scenic southwest Virgina. Furthermore, the Creeper Trail's midpoint in Damascus, Virginia intersects with the US 76 TransAm cross-country bike route, offering an opportunity to connect to a major coast-to-coast route system. NC 4 should be extended to link to this trail and thus US76.

TENNESSEE ROUTES

Tennessee recently updated their state bike route system. The former route system, Bike Routes Across Tennessee (BRAT) is still signed with route details listed on the Tennessee Department of Transportation's website. While neither route system includes any direct connections to North Carolina's system, there are linkage opportunities. With the potential to shift NC 2 west of the Blue Ridge Parkway and include a northern mountains extension route to Virginia, the following towns along this route near the Tennessee border could serve as gateways. These potential gateways and connectors include:

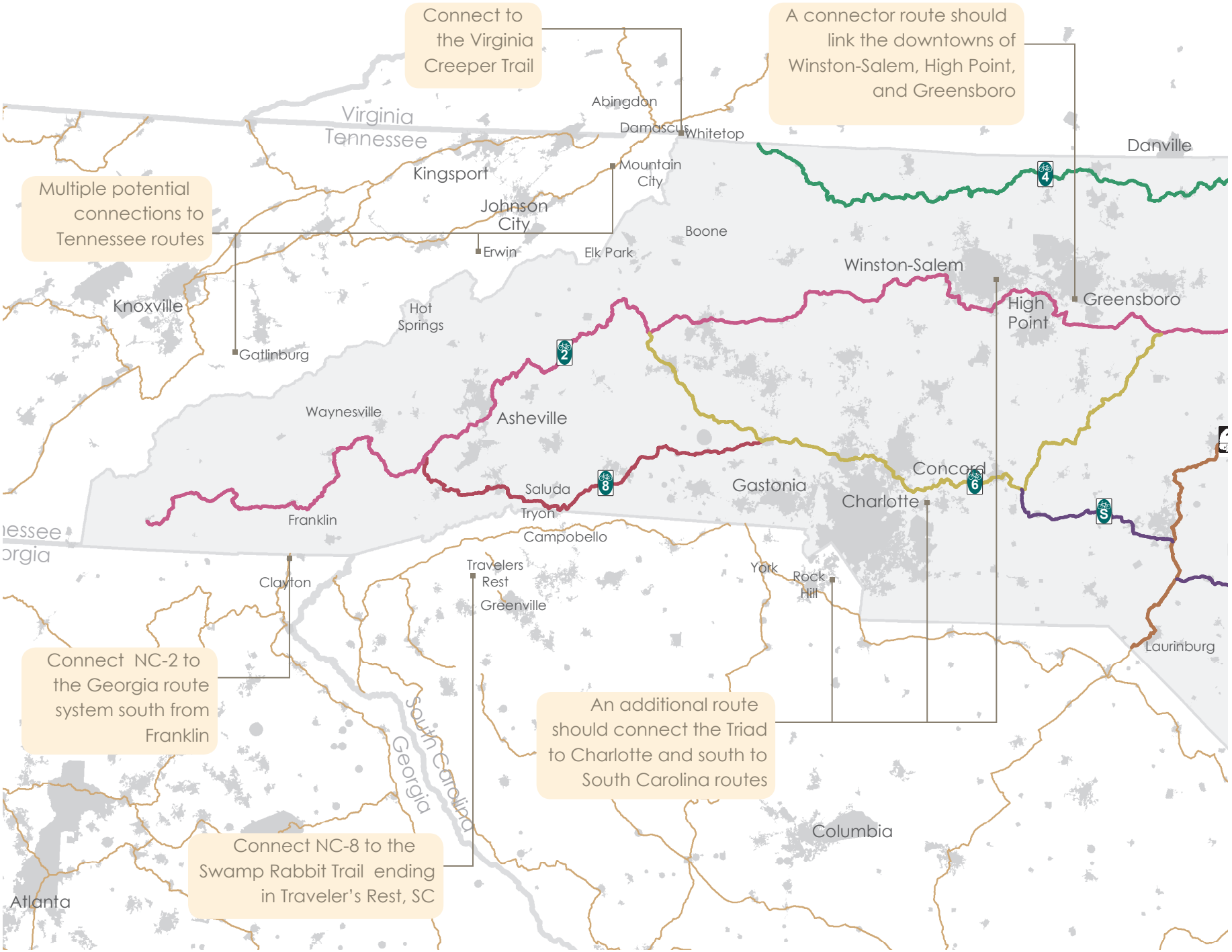
- Boone, NC - northwest of Boone, US 421 crosses into Tennessee and Mountain City. Tennessee's Chattanooga to Mountain City route passes west of Mountain City, Tn. The US 421 corridor could serve as a potential connector.
- Elk Park, NC - US 19E runs west from Elk Park and connects with the Mountains route of the BRAT system at Roan Mountain State Park in Tennessee.
- Hot Springs, NC - NC 208 heading west will connect (via Tn 70/107) to the Chattanooga to Mountain City route near Greeneville, TN less than 30 miles away
- Between Hot Springs and Burnsville, NC, NC 212 and US 19W will connect to Erwin, TN, which lies 15 miles from Tennessee's Chattanooga to Mountain City route.
- Great Smoky Mountains National Park connector - If Tennessee were to extend a bike route through Gatlinburg, TN toward Great Smoky Mountains National Park, US 441 could serve as a connector west of Sylva and Waynesville, NC.

GEORGIA

Georgia's state bike route system has one route directly connecting to North Carolina. It enters North Carolina less than 15 miles south of the town of Franklin and NC 2. US 441/US 23 could serve as a connector between Franklin, NC and the Georgia state bike route system.

THE TRIAD

NC 2 currently meanders south of Winston-Salem, avoiding the city. It similarly misses High Point and Greensboro. The network of bicycle routes identified throughout the triad provides an opportunity for routing directly through the downtowns of these cities. A connector route through the cities would yield potential savings in mileage, as well as provide an option for those interested in travelling between urban centers.


Connect to the Virginia Creeper Trail
A connector route should link the downtowns of Winston-Salem, High Point, and Greensboro
Multiple potential connections to Tennessee routes
Connect NC-2 to the Georgia route system south from Franklin
An additional route should connect the Triad to Charlotte and south to South Carolina routes
Connect NC-8 to the Swamp Rabbit Trail ending in Traveler's Rest, SC
Virginia
Tennessee
Abingdon
Damascus
Whitetop
Danville
Kingsport
Mountain City
Johnson City
Erwin
Elk Park
Boone
Winston-Salem
High Point
Greensboro
Knoxville
Hot Springs
Gatlinburg
Waynesville
Asheville
Saluda
Tryon
Franklin
Gastonia
Concord
Charlotte
Campobello
Clayton
Travelers Rest
Greenville
York
Rock Hill
Laurinburg
South Carolina
Georgia
Columbia
Atlanta

NORTH-SOUTH CONNECTOR

The current system does not include a north/south connector in the western half of the state. The counties encompassing and between Charlotte and Winston-Salem - Mecklenburg, Cabarrus, Rowan, Davidson, and Forsyth - have all published bicycle route systems (Davidson's has not been finalized). These localized route systems present a potential opportunity in developing an additional segment of the statewide route system that serves as a north/south connector in the western half of North Carolina.

SOUTH CAROLINA ROUTES

North Carolina's current state bike route system connects to South Carolina's bike route system in two places. NC 3 connects to South Carolina's Coastal Route along the east coast and US 1 continues through South Carolina, entering near Laurinburg, NC.

The new North-South Connector could serve as a connection to two South Carolina routes: the Central Route finishes in the town of York, SC less than 30 miles from Charlotte and the NC border, and the Northern Crescent route runs east/west through SC, closely paralleling the NC border. Rock Hill, SC and York, SC are potential connection points to the Northern Crescent route near the the Charlotte border. NC 8 southeast of Tryon straddles the NC/SC border on Hunting CountryRd/Webster Rd. Through the town of Landrum, SC, a direct connection could be established to the Northern Crescent route in Campobello, SC, ~5 miles to the south.

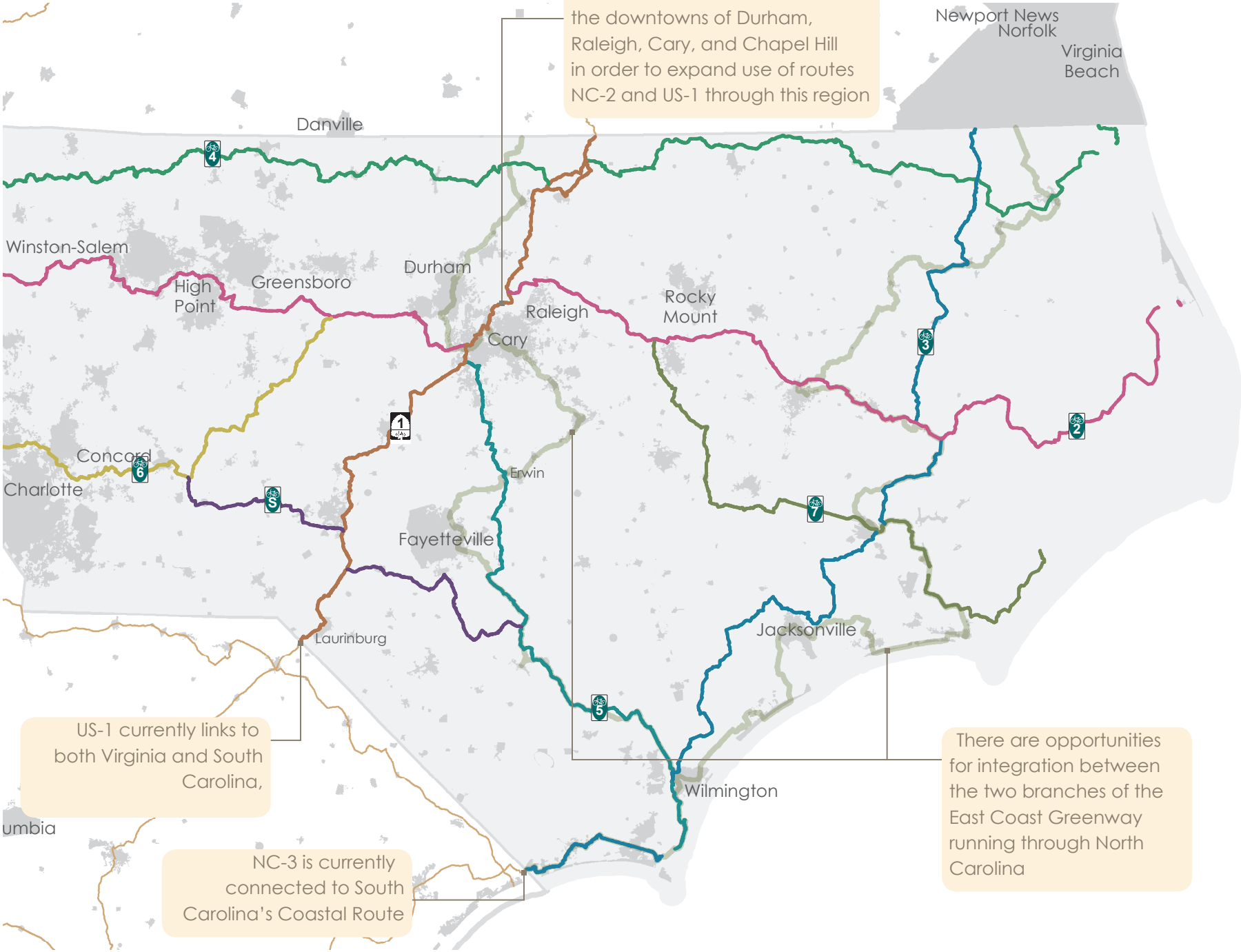
Another connection opportunity exists where the popular Swamp Rabbit Trail beginning in Greenville, SC finishes in Travelers Rest, SC - less than 30 miles from Saluda, NC and NC 8 near the NC/SC border.

THE TRIANGLE

Similar to the routing in the Triad, NC-2 and US-1 avoid the downtowns of Raleigh, Durham, Cary, and Chapel Hill. Given the amount of development in this region, this avoidance does not yield a pleasasnt rural route but is instead difficult for cyclists and identified as a problem area. A connector route or routes between these downtowns would both serve touring cyclists interested in visiting these urban centers, and provide a connection for residents of the triangle to travel between the cities by bike. Connector routes should be added through this area.

THE EAST COAST GREENWAY

The East Coast Greenway is planned to be a traffic-free long-distance urban trail project that will connect 25 major cities from Maine to Florida, incorporating waterfront esplanades, park paths, abandoned railroad corridors, canal towpaths, and other pathways designated for non-motorized use. This route system is in development, and follows roadways where trails haven't yet been developed. The main spine of the route runs through Durham utilizing the American Tobacco Trail and then southeast to Wilmington where it meets a coastal route. These two branches parallel US-1, NC-5, and NC-3 for significant sections. Routes should be coordinated with the East Coast Greenway, overlapping where appropriate and signed to emphasize the other system where the routes cross. This will allow resources invested in roadways of each to benefit the other and generate the benefit of additional travelers along shared routes, which makes routes more comfortable by increasing awareness of them and influencing motorist behavior.


Connector routes should link the downtowns of Durham, Raleigh, Cary, and Chapel Hill in order to expand use of routes NC-2 and US-1 through this region
Newport News
Norfolk
Virginia Beach
Danville
Winston-Salem
High Point
Greensboro
Durham
Raleigh
Cary
Rocky Mount
Concord
Charlotte
Erwin
Fayetteville
Laurinburg
Jacksonville
Wilmington
US-1 currently links to both Virginia and South Carolina,
NC-3 is currently connected to South Carolina's Coastal Route
There are opportunities for integration between the two branches of the East Coast Greenway running through North Carolina

Route Information

Two items stood out from the public feedback gathered on state bike routes: route information should be improved both on the ground in the form of better signage, and online for use during trip preparation.

SIGNAGE

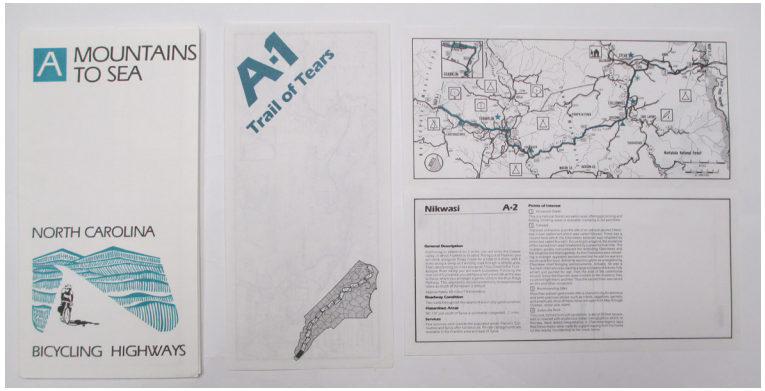
Originally, routes were signed at each turn with the green bike route sign, shown below. While these wayfinding signs are useful for those following a route exactly, they do not provide additional information such as distance to the next town, or information about connections to local and regional routes where these touch or come close to the state bike routes. Further, as development has occurred along the routes, many signs have been removed, making it difficult to follow the routes with signs alone.

Current signage for NC-2 in Carrboro

GUIDES

Paper maps are currently available to order through the NCDOT Bicycle and Pedestrian Division's website. The maps come with a guide full of useful information including bicycle laws and safety tips, detailed route descriptions, and the location of hazardous segments, camping areas, bicycle shops, services, and other points of interest.

While these guides provide much of the information cyclists are looking for, they sometimes take several weeks to arrive upon order and are out of date in some areas. This makes them inconvenient for use by cyclists who plan trips on short notice or visitors interested in comparing different route options. Cyclists around the state have requested that the information contained in these guides be made available on the web. Even further, cyclists are interested in using interactive maps that can be viewed on smart phones or imported into other trip planning tools.



The current Bike Route Guide for NC-2

9.3

Recommendations for the System

Route Changes

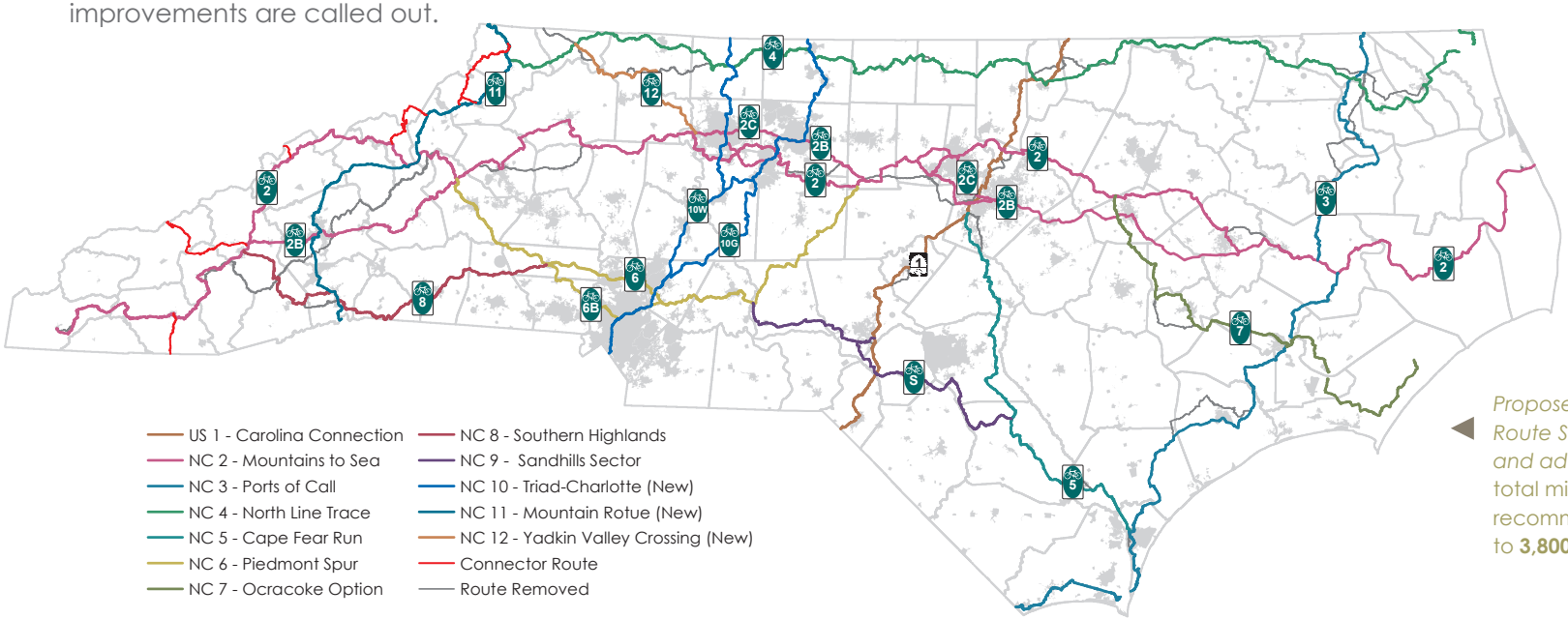
Using a combination of the following inputs, detailed re-routing recommendations for each state bike route are provided on the following pages. **A total of 805 miles of re-routes are recommended.**

- Bicycle Level of Service along the current routes
- Local and regional route locations
- Neighboring state route locations
- Online map input
- Local cyclist input

While in some cases re-routing can address segments that have become unsuitable for cycling, in many cases no suitable alternatives exist through developed or environmentally sensitive areas. In these cases, improvements are recommended. For each segment of the system, priority areas requiring short-term improvements are called out.

Additional Routes and Connections

Many additional route connections are recommended to make the system comprehensive, efficient, and useful to a broader range of cyclists. This includes three new routes as well as other connectors that tie into neighboring state systems, link to key destinations, and fill current gaps in the system. **A total of 1,167 additional miles are recommended** and detailed on the following pages. One key additional route type is the 'business route'. Business routes complement the existing system where it avoids cities, providing connections directly through downtown areas. While current rural routes bypassing cities are useful for cyclists interested solely in scenic, undeveloped landscapes, many cyclists have expressed an interest in routes connecting directly to urban areas. Business routes provide this option for routes travelling near the major urban centers of the state. Beyond their use for touring cyclists interested in seeing cities, business routes will also be useful to local cyclists interested in travelling around their own urban areas. Improvements on these routes will therefore benefit many different groups.



Proposed State Bike Route System: Re-routes and additions bring the total mileage of the recommended system to **3,800 miles.**

US 1 - CAROLINA CONNECTOR

Re-route near Middleburg to avoid possible roadway flooding

Evaluate and incorporate re-routing recommendations proposed by local cyclist Larry Sams

Re-route through the Triangle in coordination with re-routes of NC 2 and other planning efforts, such as the Triangle Commuter Bike Initiative

Re-route southwest from Sanford using Carbonton Rd, Franklin Dr, Henley Rd, Center Church Rd, and Plank Rd

No changes further south of Sanford

US 1 - Proposed Route
US 1 - Alternative Considered
Proposed Route System
Current Route System
East Coast Greenway
State Park
Federal Land

0 10 20 Miles

9.3

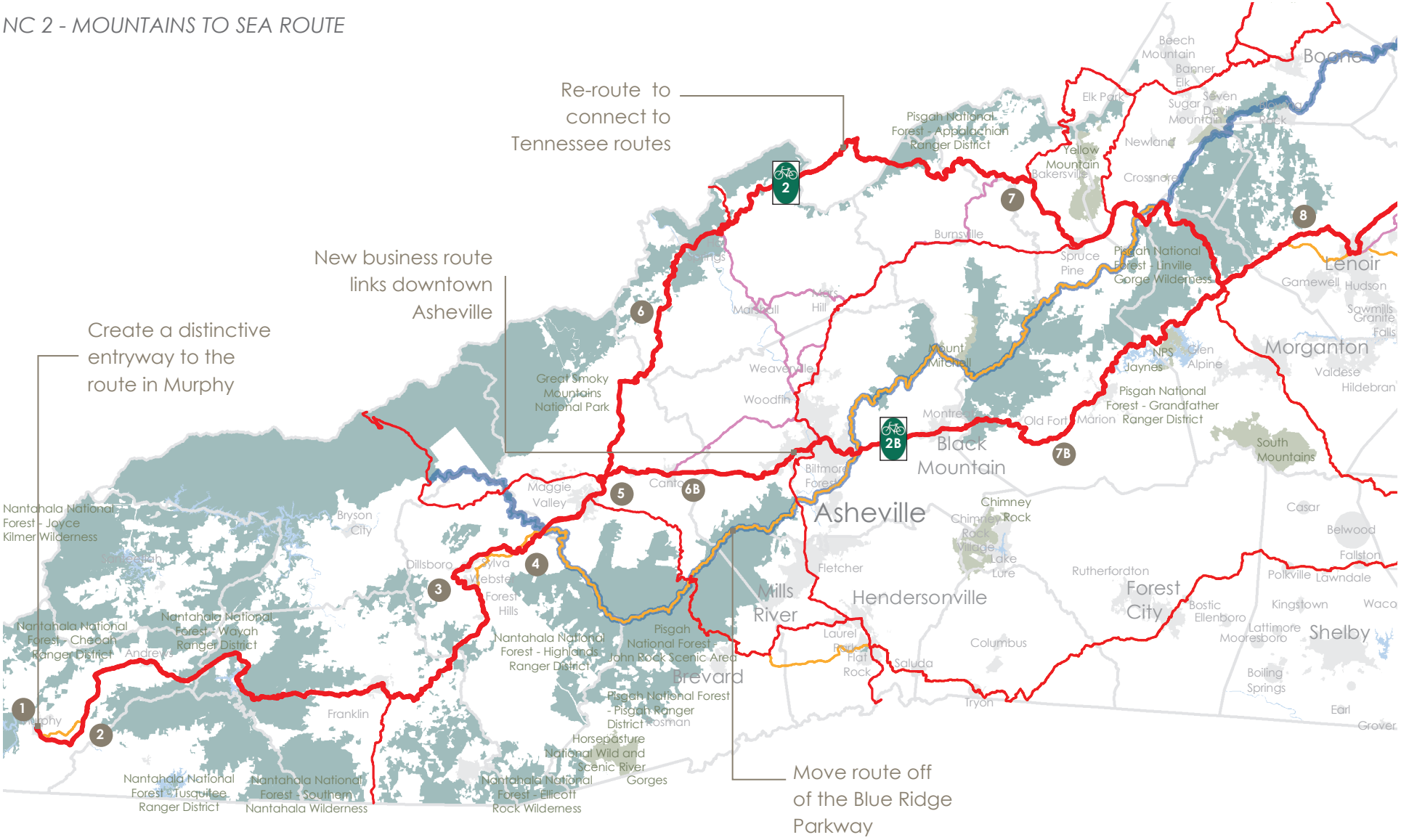
ID	Segment	Current Condition	Recommendation	Improvement Sections	Input Source(s)
1	Virginia border to the Triangle region north of Falls Lake	Generally pleasant riding conditions, rural	Eliminate the section of US 1 Carolina Connector going over Kerr Lake between Hicksboro Rd and Jacksontown Rd. Eliminate section from Middleburg to intersection of Jacksontown Rd and Manson-Drewery Rd via Manson; utilize Jacksontown Rd/N Lee Ave to connect Middleburg to Jacksontown Rd and Manson-Drewery Rd.	NC 39 heading west into Henderson; US 158 heading north from Henderson	Tony Goodnight; Mike Dayton; Dave Connellly
2	Triangle Region	This section has been affected by development from the growing triangle region.	Cyclist Larry Sams studied this section and proposed re-routing recommendations for US 1 through the triangle. Re-route Six Forks Rd/Norwood Rd section to Durham Rd and Carpenter Pond Rd in order to connect New Light Rd and Norwood Rd. Also, align with East Coast Greenway utilizing Cary greenways from Umstead Park to Davis Dr.	Due to high traffic volumes on roads through this area, a large majority will need bicycle facility upgrades. *Prioritize Carpenter Pond Rd and Davis Dr	Larry Sams; input map comments; Cary bike map; Triangle Bike Commuter Initiative; Donna Kidder (Team CBC)
3	South of the Triangle region to the South Carolina border	Generally pleasant riding conditions, rural; Heavier traffic closer to Apex	Besides one change southwest of Sanford (see 4), no changes; some sections through towns should be prioritized for upgrades	*Prioritize Charlotte Ave and Carthage St through Sanford; Old Hwy 1 and Salem St entering Apex	Rainbow Cycles bike shop in Southern Pines; Tony Goodnight; Bob Oderkirk (Team CBC); input map comments; field review
4	Sanford area	Higher amounts of traffic on current route between Sanford and S Plank Rd	Re-route from Sanford heading southwest utilizing Carbonton Rd, Franklin Dr, Henley Rd, Center Church Rd, and Plank Rd		John Mueller - Rainbow Cycles bike shop in Southern Pines; Bob Oderkirk (Team CBC)

US Bike Routes

US Bike Route 1 Carolina Connector, adopted as part of the North Carolina State Bike Route system, is part of a developing network of long-distance bicycle routes across the United States. It is a collaborative effort spearheaded by a task force under the auspices of the American Association of State Highway and Transportation Officials (AASHTO). Members of the task force include officials and staff from state DOTs, the Federal Highway Administration, and non-profits, including Adventure Cycling Association, the East Coast Greenway Alliance, and Mississippi River Trail, Inc. North Carolina designated US 1 as part of the State Bike Route system in 1982. Changes to US 1 will need final approval from AASHTO.

Source: Adventure Cycling Association. http://www.adventurecycling.org/routes-and-maps/us-bicycle-route-system/usbrs-101/

NC 2 - MOUNTAINS TO SEA ROUTE



NC 2 - Proposed Route
NC 2 - Alternative Considered
Proposed Route System
Current Route System
Blue Ridge Parkway
State Park
Federal Land

9.3

ID	Segment	Current Condition	Recommendation	Improvement Sections	Input Source(s)
	General	The Mountains to Sea Route bike route is often confused with the cross-state Mountains-to-Sea Trail , an off-road hiking trail.	Rename NC 2 to avoid this confusion.		
1	Terminus of NC 2 in Murphy	The current "end" sign is placed at the intersection of US 64 with US 19/74/129 in Murphy. This is a barren, high traffic intersection with little to highlight Murphy.	Extend route into downtown Murphy continuing straight across the intersection to SR 1326, Hiwassee Street, which should be followed to US 19 Business. This is the "square" in Murphy and is much more interesting and unique than the current "end" intersection.		Reuben Moore
2	Murphy to Cullowhee	Quality route from Murphy past Cullowhee to the intersection of 107 and River Rd. While a back route alternative exists going through Cullowhee, which the higher-traffic current route on 107 skips, 107 has bike lanes until River Rd.	Re-route small section east of Murphy, utilizing new US 64 rather than Old US 64 - use NC 141 to reconnect with current NC 2. Show links to Cullowhee.	Paved shoulder generally	Smoky Mountain Bicycle bike shop in Franklin; Cherokee County CTP Committee
3	107 & River Rd to north of Sylva	Current NC 2 on 107 north of River Rd is a high traffic section with little to no space for cyclists.	Eliminate this current section. Re-route via River Rd to the west. Although this alternative adds distance, it is more scenic and connects through downtown Sylva.	Paved shoulder generally	Reuben Moore
4	North of Sylva to Balsam Gap and the intersection of US 23/74 and the Blue Ridge Parkway	US 23/74 Expressway is carries high volume and high speed traffic	Re-route using parallel county roads that are now paved and offer an alternative to the current route on the US 23/74 Expressway toward Balsam Gap.	Paved shoulder generally	Kent Cranford

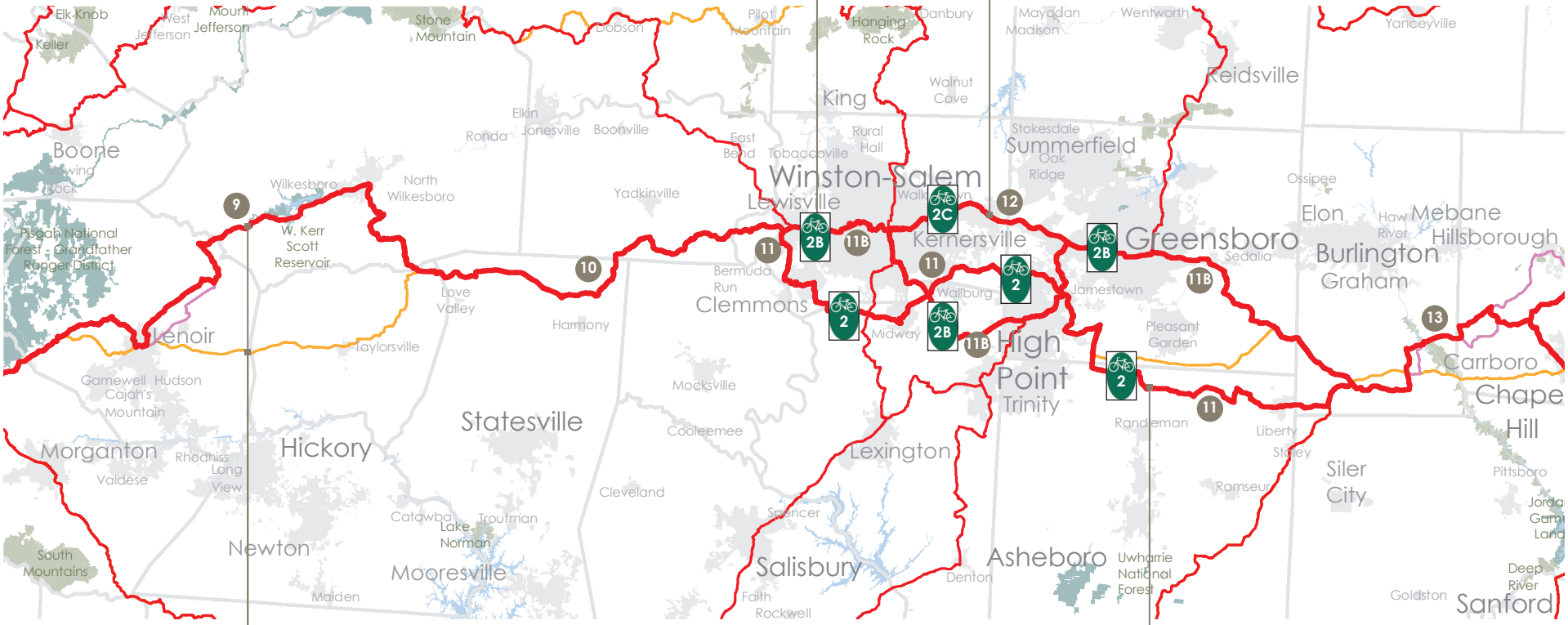
ID	Segment	Current Condition	Recommendation	Improvement Sections	Input Source(s)
5	Balsam Gap heading northeast from the intersection of US 23/74 and the Blue Ridge Parkway to Lake Junaluska	Existing route runs along the Blue Ridge Parkway. A lack of shoulders, pavement deterioration, and significant touring traffic make this road difficult for cyclists. In addition, the Blue Ridge Parkway is a well-known signed route, so those cyclists interested in riding it can easily access information about the route whether or not it is a designated state bike route.	Re-route NC 2 off of the Blue Ridge Parkway. Route through Waynesville, Lake Junaluska, Clyde, and Canton. From west to east, take Old Balsam Rd from near Balsam Gap toward Waynesville. From east to west, must take US 23/74. If bicycle facility improvements are implemented along the N Main St corridor in the future, consider utilizing the N Main St corridor through Waynesville rather than the greenway.	East to west section of US 23/74 - high speed, high traffic climb to Balsam Gap	Cecil Yount
6	Lake Junaluska to Spruce Pine via Tennessee	Tennessee is currently updating their state bike route system and interested in establishing connections to North Carolina's updated statewide bike route sytem. This would provide a link in addition to linking scenic, rural, and rugged mountainous terrain in western NC.	Route on NC 209 north from Lake Junaluska to Hot Springs. Significant climbing but spectacular route. From Hot Springs, head north through very scenic but challenging route to Spruce Pine via Tennessee connection and Bakersville, NC. This skips Asheville, Weaverville, and Burnsville but serves as a regional connector to eastern Tennessee and rural western NC. Aligns with segment 7 of the (Draft) High Country Regional Bike Plan route from Bakersville to Spruce Pine	Paved shoulder generally	Cecil Yount; John Mudge - RollsRite bike shop in Waynesville; Sam White - Liberty Bicycles in Asheville; Phil Trew; Asheville/ Buncombe area bike map; Jessica Wilson of Tennessee DOT
7	Spruce Pine to the Blue Ridge Parkway and current NC 2	Three-Mile Hwy and US 221 currently provide a low level of service for bicyclists	Follow 19E east/north of Spruce Pine eventually connecting to Three Mile Hwy and eventually the Blue Ridge Parkway. Aligns with segment 9 (partially) and 9A of the High Country Regional Bike Plan (Draft)	Three-Mile Hwy and US 221 connecting to NC 183	Randy Raskin

ID	Segment	Current Condition	Recommendation	Improvement Sections	Input Source(s)
6B	Business Route: Lake Junaluska to downtown Asheville	Pavilion in Clyde has water, bathrooms, and parking available - gathering spot for bicyclists.	Highlight pavilion in Clyde. Heading east of Canton, use a combination of US 19/23, Old 19/23 through Candler and Sand Hill Rd to connect to downtown Asheville. Running parallel to Sand Hill Rd, highlight Sulphur Springs Rd on which lies a school, city pool, and heavily used park.	US 19/23 Asheville Hwy east of Canton; *Prioritize Haywood Street into Asheville	Cecil Yount; input map comments
7B	Business Route: downtown Asheville to current NC 2 (intersection of Brown Mountain Beach Rd and NC Rt 181 north of Morganton)	There is a lack of bike route options heading east out of downtown Asheville. Low bicycle level of service between downtown Asheville and Black Mountain	Add this route to the NC 2 Business Route. This section will need improvements, but would make a much needed connection east from downtown Asheville toward Black Mountain, Old Fort, Marion, and the Morganton area.	*Prioritize Tunnel Rd/US 70, and Swannanoa River Rd	Julie White; Lyuba Zuyeva
8	Blue Ridge Parkway to Lenoir	Abington Rd currently provides a low level of service for bicycling; better alternative exists on NC 90.	Re-route section on Abington Rd into Lenoir with NC 90.	Paved shoulder on NC 181 from Blue Ridge Parkway toward Lenoir.	Bob Giduz; Shawn Moore and Jeff Welch of Luna Cycles bike shop in Lenoir
9	Lenoir to the intersection of Brushy Mountain Rd and Sulphur Springs Rd/Linneys Mill Rd.	Wide road with varying shoulder (1-2 feet); heavy traffic including trucks (for motor vehicles, this road is used as a more direct route to the mountains as I-40 turns southwest toward Asheville)	Re-route this section. Route north along 268 (Happy Valley) toward Wilkesboro; reconnect to current NC 2 east of Taylorsville. Route is beautiful and scenic but adds significant distance. New route highlights greenways in Lenoir and links Wilkesboro.	Paved shoulder generally	Bob Giduz; Shawn Moore; Jeff Welch; input map comments
10	Love Valley to Lewisville (western edge of Winston-Salem)	Rural, lower traffic, currently a good route	No change	Paved shoulder generally	Tony Goodnight

NC 2 - MOUNTAINS TO SEA ROUTE

Add a business route through Winston-Salem, High Point, and Greensboro to complement the existing rural route through this region

As part of the new business route system, the Triad Connector will link downtown Winston-Salem to downtown Greensboro



268 provides a scenic alternative to the heavily trafficked 64/90 between Lenoir and Taylorsville

Groomstown Rd is the preferred option from High Point to Snow Camp and connects through the Town of Liberty

NC 2 - Proposed Route
NC 2 -Alternative Considered
Proposed Route System
Current Route System
State Park
Federal Land
0 10 20 Miles

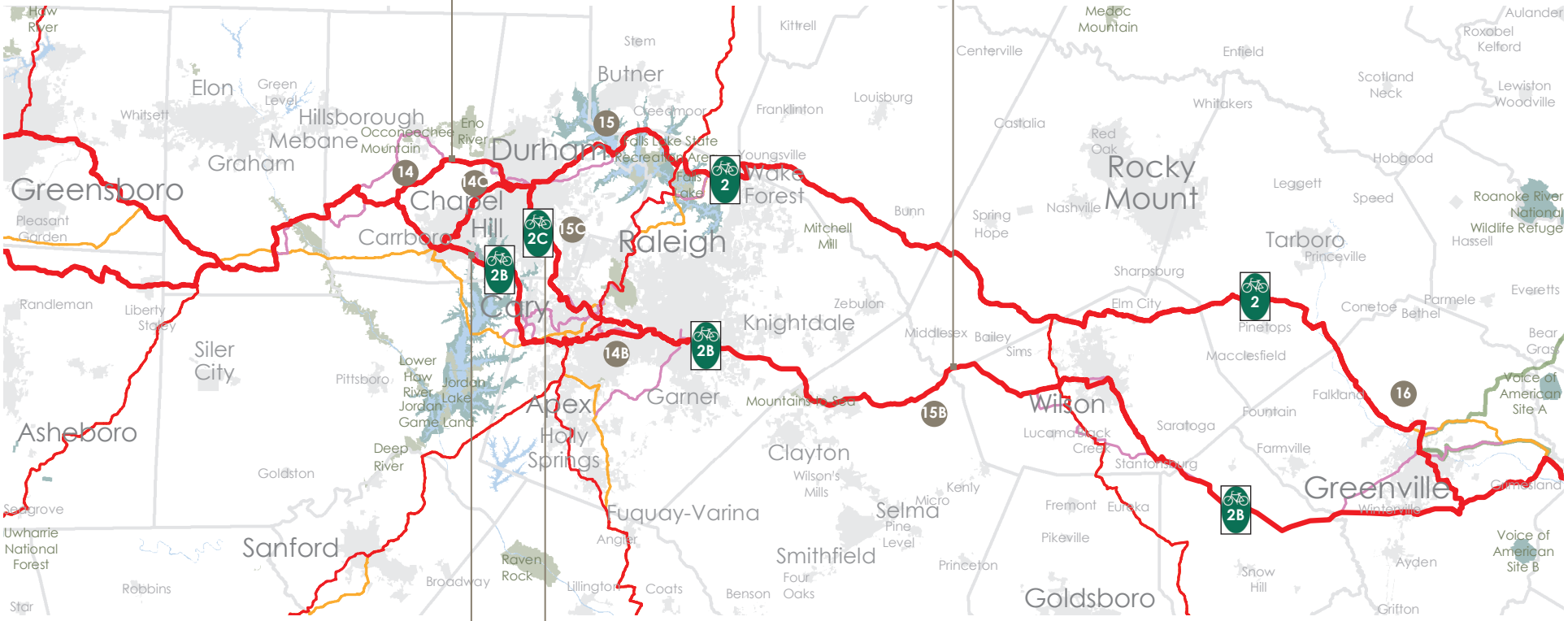
9.3

ID	Segment	Current Condition	Recommendation	Improvement Sections	Input Source(s)
11	Lewisville to Snow Camp	These roads are still bicycle friendly and well selected; preserve as a complementary rural option to the urban business route.	Re-route section on NC 62 south of Greensboro using Groomtown Rd to Snow Camp via the town of Liberty.		Aaron Daniel and the Greensboro Velo Club team; input map comments
11B	Business Route: Lewisville to Snow Camp	This route links the hearts of downtown Winston-Salem, High Point, and Greensboro. Improvements will be needed to ensure safe passage through these urban centers.	Connect Lewisville to downtown Winston-Salem, downtown High Point, and downtown Greensboro. This Business route criss-crosses NC 2 twice before reconnecting near Snow Camp in Alamance County.	*Prioritize improvements to the urban center segments-particularly S Main in W.S., Lexington Ave through downtown High Point, and sections of Market St, McConnell Rd, and Alamance Church Rd in and around Greensboro.	Clemmons Bicycle; Zach Lail – Mock Orange Bikes, Winston-Salem; Aaron Daniel – Greensboro Velo Club president; Bicycle Toy and Hobby, High Point; Bike Maps - Winston-Salem, High Point, Greensboro, Davidson County, Randolph County
12	Triad Connector: downtown Winston-Salem to downtown Greensboro	This will serve as a direct connection between downtown Winston-Salem and Greensboro. However, it will need improvements to provide an appropriate bicycle level of service.	Make this connection between the downtown urban centers; prioritize improvements to make safe connection through Kernersville	*Prioritize improvements to Old Greensboro Rd, Mountain St, and W Market St.	
13	Snow Camp to Carrboro	Old Greensboro Rd is the most direct route to Carrboro/the Triangle from the Snow Camp area. This route is scenic, but carries higher traffic with limited shoulder and misses the rural destination of Saxapahaw. The section closer to Carrboro was recently resurfaced with 1-2 feet of shoulder added.	Re-route to the village of Saxapahaw along country roads that carriy less vehicular traffic, including Dairyland Rd. Proposed route is more scenic and connects to the popular rural cycling destinations of Saxapahaw and Maple View Farm while adding minimal distance.	*Prioritize section of Old NC 86 between Calvander and Hillsborough Rd northwest of Carrboro - this is a dangerous pinch point for bicyclists. Add paved shoulders generally, especially Sax-Beth Rd leading into Saxapahaw	Jeremy Pinkham; Eric Wiebe; Tamara Sanders – The Clean Machine bike shop in Carrboro; Dave Connelly; input map comments

NC 2 - MOUNTAINS TO SEA ROUTE

Re-route to downtown Durham and connect to Orange County routes that link historic Hillsborough

Business route continues out to Greenville and the main NC 2 route, linking NC 5 along the way, to provide a more direct alternative for cyclists heading east toward the coast from Raleigh



Along with re-routing of current NC 2 through the triangle, additional business and connector routes between each of the urban centers would provide more choice for riders interested in visting city centers

NC 2 - Proposed Route
NC 2 - Alternative Considered
Proposed Route System
Current Route System
East Coast Greenway
State Park
Federal Land
Miles 0 10 20

9.3

ID	Segment	Current Condition	Recommendation	Improvement Sections	Input Source(s)
14	Maple View Farm to downtown Durham	Scenic route with lower traffic volumes through rural parts of Orange and Durham Counties leading to downtown Durham.	Re-route NC 2 to connect through the northern Triangle area and downtown Durham. Proposed business route (see below) replaces original route and connects Chapel Hill and Raleigh.	Paved shoulder generally	Eric Wiebe; Casey Collings; Dave Connelly; Orange County bike map
15	Durham to Youngsville area	Main route continues through Durham to current NC 2 crossing Falls Lake	Make this connection continuing east, north of Raleigh to the bicycle friendly sections of current NC 2 heading east from Youngsville	Improvements needed in Youngsville	Mike Dayton; Eric Wiebe
16	Youngsville area to Greenville area	Generally pleasant riding conditions; low bicycle level of service along Old River Rd and US 264	Retain majority of route, except the section east of Greenville - Old Creek Rd and US 264; connect this route south through downtown Greenville toward Washington	*Prioritize improvements to Old River Rd northwest of Greenville	Mike Dayton; Ryan Danell (EC Velo Team)
14B	Triangle Business Route: Carrboro/ Chapel Hill to Raleigh via Cary	Current NC-2 was once a great route but bicycle facility improvements have not kept pace with development; Proposed NC-2 Business utilizes a combination of recent greenway developments and on-road connections to replace this route.	Eliminate current NC 2 from Carrboro to the intersection of Purnell Rd and Stony Hill Rd near Youngsville. Add business route that connects Chapel Hill; utilizes greenways along 54, a significant paved section of the American Tobacco Trail, and a developing greenway system in Cary; aligns with the East Coast Greenway; and connects to downtown Raleigh via the NC State campus and greenways	*Prioritize improvements to Raleigh Rd/54 leaving Chapel Hill, Barbee Chapel Rd, and Stagecoach Rd	Dave Connelly; Durham bike commuters meet-up; Larry Sams; Mike Dayton; Branson Kimball; input map comments; Durham, Cary Bike Maps; BLOS
15B	Triangle Business Route: Downtown Raleigh to Greenville area	Pleasant riding conditions east of Poole Rd; lower bicycle level of service through Wilson and Winterville; connects to ECG and Neuse River Greenway	Include this direct route for bicyclists not wanting to route north to connect with NC 2 main route (Current NC 2) heading east; cross the Tar River after Grimesland heading east	*Prioritize improvements to Poole Rd (Raeligh area) NC 42 through Wilson; improve Worthington Rd through Winterville; Improve Covered Br Rd (Wilson County)	Mike Dayton; Ryan Danell (EC Velo Team); Jimmy Eatmon
14C	Triangle Connector: Carrboro/Chapel Hill to Durham	Erwin Rd currently provides a low level of bicycle service	Utilize Erwin Rd as the main connection from Chapel Hill to Durham. This road needs improvements to serve as this connection and should be highly prioritized.	*Prioritize improvements to Erwin Rd	Eric Wiebe; Casey Collins; Tamara Sanders; input map comments
15C	Triangle Connector: Durham to Raleigh	This route utilizes greenway connections and on-road facilities, but also includes a few sections that provide a low bicycle level of service	Utilize the American Tobacco Trail, Davis Dr, Cornwallis Rd, and other connectors before linking with the Carrboro/Chapel Hill-to-Raleigh connector route northeast of Cary en route to downtown Raleigh	*Prioritize Davis Dr, Aviation Pkwy, Evans Rd, and Trinity Rd	Mike Dayton; BLOS data

NC 2 - MOUNTAINS TO SEA ROUTE

The current route ends before officially hitting the 'sea'. The trail end should be shifted either to the fishing pier in Nags Head or another significant destination along the Outer Banks.

Main route and business route meet up west of Washington, where proposal re-routes around US 264 to connect downtown Washington

The current route goes past Lake Mattamuskeet, the largest natural lake in NC and a wildlife-viewing destination

NC 2 - Proposed Route
NC 2 - Alternative Considered
Proposed Route System
Current Route System
East Coast Greenway
State Park
Federal Land

0 10 20 Miles

9.3

ID	Segment	Current Condition	Recommendation	Improvement Sections	Input Source(s)
17	Washington Area	US 264 provides low bicycle level of service	Re-route to avoid 264 west of downtown Washington; use Grimes Rd, Plymouth St, and W 3rd St; Through downtown, use W. Stewart Pkwy		Mike Dayton and Jonathan Kuhn
18	Washington to Manteo	Generally good section	Re-route NC 2 bridge into Manteo: southern bridge is preferable because of limited shoulder on northern bridge. However, northern bridge may be decommissioned in the future and become bike/ped only - adjust accordingly		Mike Dayton, Albemarle Bike Plan Existing Conditions, and Steve Lambert
19	Eastern terminus	Currently ends in Manteo	Consider shifting finish to the Outer Banks. Options: Continue straight across Virginia-Dare Trail bridge to Nags Head, finish at fishing pier; finish at Hatteras Island destination; tie into regional Outer Banks		

NC 3- PORTS OF CALL

Re-route to scenic roadways along the Chowan River, connecting to the Arrowhead Beach community

The NC 32/94 bridge over the Albemarle Sound has limited shoulder space and low walls - improvements needed

Routing via the NC 32/94 bridge and Mackeys Rd will benefit the many local cyclists who use this connection to begin loops out of Plymouth, while avoiding the current higher-traffic route

The East Coast Greenway follows a similar corridor but takes a less direct route in order to connect existing trails. NC 3 and the ECG can benefit from clear wayfinding where they cross and overlap.

Much of the current alignment is scenic and should remain but requires improvement, such as the Neuse River Bridge Connection

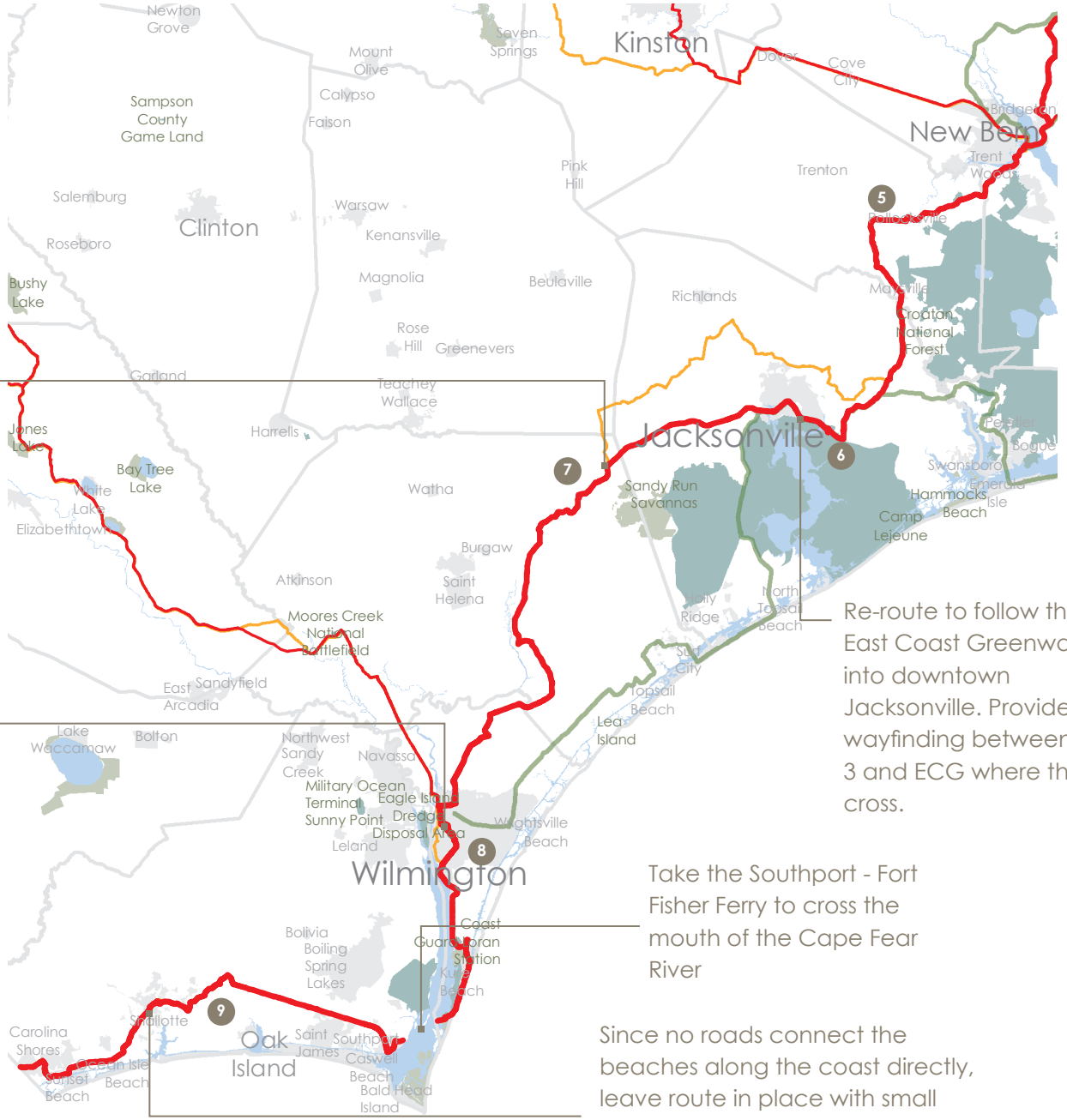
NC 3 - Proposed Route
Proposed Route System
NC 3 - Alternative Considered
East Coast Greenway
Current Route System
State Park
Federal Land

0 10 20 Miles

9.3

ID	Segment	Current Condition	Recommendation	Improvement Sections	Input Source(s)
1	VA border to Edenton	Current NC 3 parallel to the Arrowhead Beach area uses higher traffic roads while skipping the Arrowhead Beach community and the Chowan River en route to Edenton.	Utilize the Arrowhead Beach option along quieter roads that offer a more scenic option along the Chowan River. It connects to the Arrowhead Beach community en route to Edenton. The ECG represents an alternative north/south route east of the Great Dismal Swamp, utilizing the Dismal Swamp Canal en route to Elizabeth City and further south through this area.	Current NC 3 north of the Arrowhead Beach area to the VA border is narrow - recommend paved shoulder in future road upgrades; *Prioritize NC 32 into Edenton	Sam Barrow, Planner, Edenton; Albemarle Field Work Team
2	Edenton to Plymouth	Current NC 3 crosses the Chowan River and uses US 17 and NC 45 to the Plymouth area. These roads have truck traffic and limited space for cyclists	Re-route heading east southeast from Edenton, more enjoyable riding conditions exist before and after the Albemarle Sound bridge - this bridge does not provide a high comfort level for a cyclist; however NC 32 and Mackeys Rd provide a good option into Plymouth	*Prioritize Albemarle Sound bridge improvements - add higher railing, limited shoulder and debris are also concerns	Inner Banks Cycles bike shop - Plymouth; Albemarle Field Work team; Mike Wright, Plymouth, General Services Director
3	Plymouth to Bath	Current NC 3 on Long Ridge Rd contains truck traffic and limited space for a cyclist	Current NC 3 on Long Ridge Rd is the preferable option to parallel side roads, but should be improved	*Prioritize Long Ridge Rd improvements - needs paved shoulder	Inner Banks Cycles bike shop - Plymouth; Albemarle Field Work team; Mike Wright, Plymouth, General Services Director
4	Bath to New Bern	Current NC 3 aligns with the East Coast Greenway (ECG) and Adventure Cycling Association (ACA) routes and connects with the Croatan Plan route in this area - lower traffic volumes; bridge crossing over the Neuse River should be improved	Keep current alignment	Neuse River bridge improvements needed - has some shoulder but also has debris and high speed traffic	Inner Banks Cycles bike shop - Plymouth; Albemarle Field Work team

NC 3- PORTS OF CALL



Reconnect to the existing NC 3 west of Jacksonville. The current route from this junction to Wilmington is scenic and pleasant to ride

Re-route through downtown Wilmington utilizing a route selected by the Cape Fear Cyclists and a Cycle NC ride

Re-route to follow the East Coast Greenway into downtown Jacksonville. Provide wayfinding between NC 3 and ECG where they cross.

Take the Southport - Fort Fisher Ferry to cross the mouth of the Cape Fear River

Since no roads connect the beaches along the coast directly, leave route in place with small tweaks and wayfinding to beaches

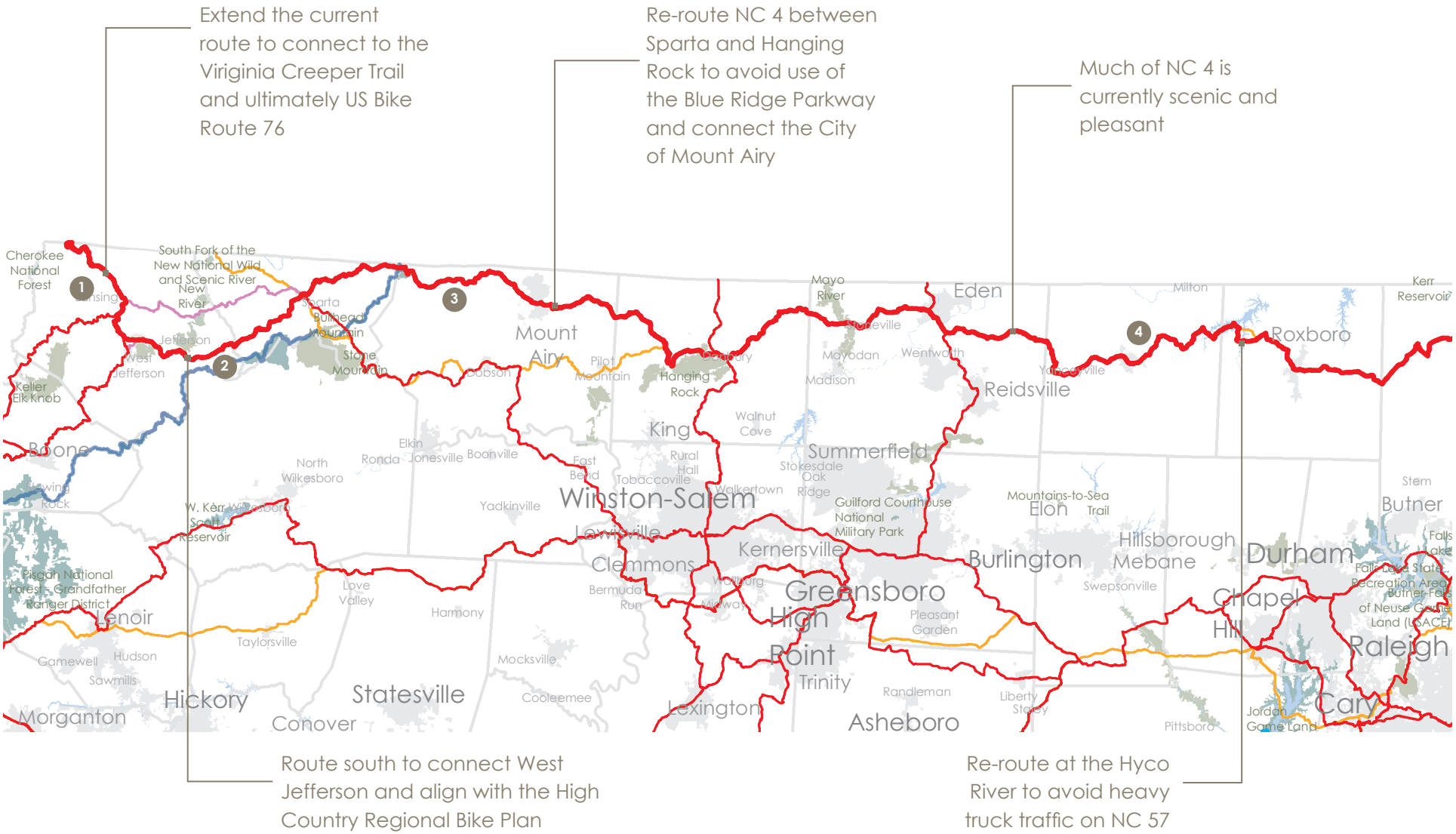
NC 3 - Proposed Route
NC 3 - Alternative Considered
Proposed Route System
East Coast Greenway
Current Route System
State Park
Federal Land

0 10 20 Miles

9.3

ID	Segment	Current Condition	Recommendation	Improvement Sections	Input Source(s)
5	New Bern to Maysville	Current NC 3 runs on scenic, low-traffic roads; NC 3 also loosely aligns with the ACA and ECG routes	Keep current alignment	Paved shoulder generally	Croatan Plan; Steve Bzomowski
6	Maysville to Jacksonville	Current NC 3 east and north of Jacksonville was flagged as dangerous by several people on the online input map; this route also avoids downtown Jacksonville	Re-route following ECG route through downtown Jacksonville utilizing greenway into downtown; highlight connections to the ECG which also provides alternative links to Emerald Isle and Beaufort	Improvements needed on Old 30 Rd; Rocky Run Rd; and NC 24	Bicycle Gallery bike shop - Jacksonville; ECG route; statewide input map comments
7	West of Jacksonville en route to Wilmington	Current NC 3 routes north and west of Jacksonville, missing the town	Re-route through downtown Jacksonville to the Burgaw Hwy/53 and further west to Old Maple Hill Rd and current NC 3; current NC 3 is good from there to Wilmington, pleasant riding conditions; ECG and ACA also provide busier, but interesting beach route alternative from Jacksonville	Improvements needed to US 17; Richland Hwy; and NC 53 heading west out of downtown Jacksonville	Tony Goodnight; Eileen McConville - president of the Cape Fear Cyclists; Bicycle Gallery bike shop - Jacksonville; statewide input map;
8	Downtown Wilmington	Market St should be avoided: busy road with little room for cyclists; Port Authority does not want Front St to be used for bicycle routes (large truck traffic shipping goods from port); the route into town is okay	Re-route utilizing route selected by the Cape Fear Cyclists and Cycle NC for the Fall 2012 Cycle NC ride. Improvements through downtown Wilmington needed. Highlight connections to local routes such as the River to Sea trail connecting downtown to Wrightsville Beach.	*Prioritize N 23rd St; S 5th St; 17th St; Independence Blvd; River Rd; Carolina Beach Rd bridge	Eileen Mcconville - president of the Cape Fear Cyclists; Cycle NC; field review
9	New Hanover County to the South Carolina border	Limited options - beach towns divided by inlets that are not connected by bridges or regular ferries; ACA and ECG routes are mostly similar through here	Use current route; small change at intersection near Shallotte - combines with ECG; short spurs or appropriate signage to beach towns/beaches are recommended	*Prioritize improvements to 211, important connector but not bicycle friendly	Tony Goodnight; Cape Fear Cycling Club

NC 4- NORTH LINE TRACE



ID	Segment	Current Condition	Recommendation	Improvement Sections	Input Source(s)
1	Western Terminus Extension: VA Creeper Trail to West Jefferson	Mostly quiet rural roads, scenic from the Creeper Trail and VA border to Lansing	Add an extension from the Virginia Creeper Trail to NC 4; the beginning of this route should connect the Virginia border to West Jefferson	Improve 194 near West Jefferson; paved shoulders generally needed	US Bike Route System; VA Bike Routes; High Country COG Bike Plan Draft
2	West Jefferson to Sparta	This section carries some traffic and connects to rural services - also connects to West Jefferson	Utilize this connection to extend current NC 4 from Sparta toward the VA Creeper Trail. Aligns with segment 36 of the High Country Regional Bike Plan (Draft).	Paved shoulders generally needed	High Country COG Bike Plan Draft
3	Sparta to Hanging Rock	Current NC 4 utilizes a small section of the BRP southeast of Sparta near Stone Mountain State Park - tough climb up US 21 and BRP if heading northwest, but current route generally has good riding conditions to Hanging Rock State Park from there	Re-route using northern route connecting through Mt. Airy. This section is scenic, avoids using the BRP without adding mileage, connects with the destination town of Mt. Airy, allows for an easy link toward Galax, Virginia and the New River Trail, and generally provides pleasant riding conditions. A Yadkin Valley connector will utilize some of the current NC 4 corridor to the south.	NC 18 leaving Sparta toward Mt. Airy; Pine St in downtown Mt. Airy; NC 89 leaving Mt. Airty	Tony Goodnight; Dave Connelly; VA Bike Routes
4	Hanging Rock to Henderson	This long stretch of current NC 4 is generally pleasant for cycling; rural, lower traffic	Small change at the Hyco River - avoid NC 57 due to heavy truck traffic - use Deer Meadow Rd and Concord Church Rd; eliminate section over Kerr Lake, re-route to the south through Henderson	NC 62 through Yanceyville; NC 39 into Henderson	Tony Goodnight; input map comments

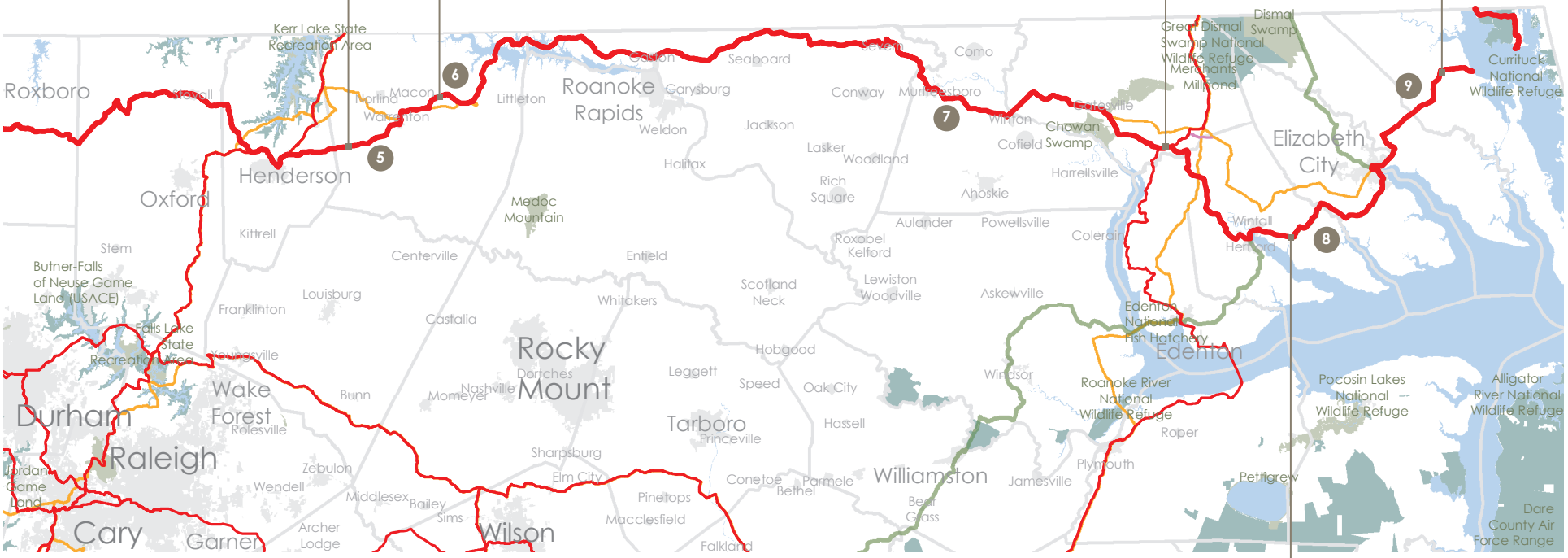
NC 4- NORTH LINE TRACE

Re-route to southern alternative running east from Henderson to avoid possible road flooding from Kerr Lake

This short re-routing provides a connection to the Town of Macon

Re-route off of NC-37 south of Gatesville

Improvements needed as NC 4 approaches the Ferry

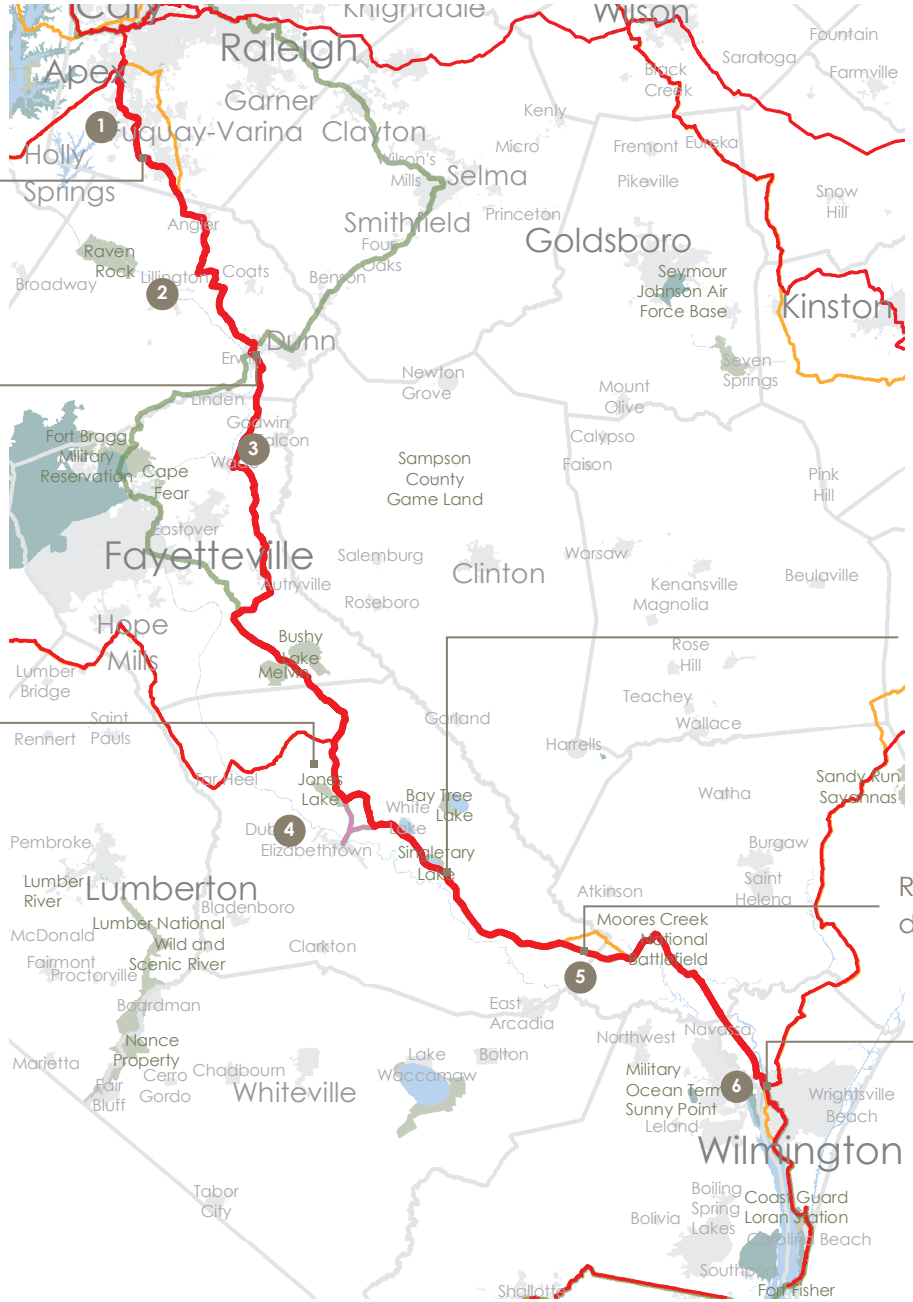


Southern alternative through the Albemarle region connects Hertford and coordinates with a section of the East Coast Greenway

NC 4 - Proposed Route
NC 4 - Alternative Considered
Proposed Route System
East Coast Greenway
Current Route System
State Park
Federal Land
0 10 20 Miles

ID	Segment	Current Condition	Recommendation	Improvement Sections	Input Source(s)
5	Henderson to Warrenton	More direct connection; pleasant riding conditions	Re-route from Henderson directly to Warrenton	US 1/US 158 heading north from downtown Henderson	Tony Goodnight
6	Village of Macon northeast of Warrenton	Good riding conditions exist on current NC 4 and on the proposed alternative through the village	Re-route to connect Macon		Tony Goodnight
7	Macon to Gatesville	This section of NC 4 is rural with low traffic volumes - pleasant riding conditions	No change	Improve bridge over the Chowan River	Tony Goodnight; input map comment
8	Gatesville to Elizabeth City	Current NC 4 misses Hertford and utilizes a section of NC 37 in Gates County that should be avoided if possible	Avoid NC 37 in Gates County; route through Hertford; join with the ECG from Hertford to Elizabeth City entering town along the waterfront	Improve North Church St bridge (Hertford); *Prioritize Halls Creek Rd, Four Forks Rd, Pitts Chapel toward Elizabeth City;	Albemarle Regional Bicycle Plan fieldwork and meetings with local planners
9	Elizabeth City to the Virginia border	High traffic, high speed roads through this section; limited alternatives	No changes to alignment; current route is the best option northeast toward the ferry; route needs improvements.	*Prioritize the following: Camden Causeway; NC 34 has limited shoulder with high traffic volumes;168 has some shoulder but is 4 lane highway with very high traffic volumes toward the ferry	Albemarle Regional Bicycle Plan fieldwork and meetings with local planners

NC 5- CAPE FEAR RUN



ID	Segment	Current Condition	Recommendation	Improvement Sections	Input Source(s)
1	Apex to Angier	The current NC 5 provides a low level of service for cycling	Re-route utilizing Tingen Rd to Old Holly Springs/Apex to Holly Springs, then combination of Piney Grove-Wilbon Rd and Angier Rd through Fuquay-Varina to Angier; highlight connection with Avent Ferry Rd leading to Harris Lake	*Prioritize: This re-route will still need improvements	Alan Johnson; Bob Oderkirk; Dean Ness; input map comments
2	Angier to downtown Wilmington	This section is generally great for cycling, with some areas requiring improvement; US 421 into downtown Wilmington is the best/only connection, but is a major highway with wide shoulders, high traffic volumes, railroad tracks, and debris	Keep route generally the same; several smaller changes noted below. Highlight connection to the Dunn-Erwin Trail (connects Dunn and Erwin); put signage at both Erwin and Cedar Creek to show the ECG current travel route connecting Fayetteville; also highlight connection to Elwell Ferry Rd and Lake Waccamaw from NC 5	*Prioritize US 421 into Wilmington	Alan Johnson; Eileen McConville - president of Cape Fear Cyclists; Dave Connelly
3	US 13 and Wade Stedman intersection	Wade Stedman no longer goes through this intersection; must use US 13 for 1/4 mile	Re-route briefly along US 13		Mike Dayton
4	Elizabethtown spur	NC 5 currently runs near Elizabethtown in the Bladen Lakes area - this could be a good opportunity to spur into the town (as does the ECG) without much additional distance	Keep current NC 5 route that skips Elizabethtown (pleasant ride); note Elizabethtown and services nearby with wayfinding and signage also highlighting ECG routing		ECG; Dave Connelly
5	210/ECG alignment in Bladen County	While NC 5 and ECG cross over and intertwine on several occasions along this route, NC 210 is one small section where they deviate - little difference between the routes but ECG on NC 210 is a little more direct	Align NC 5 with this small section of NC 210/ the ECG in Bladen County		ECG; Dave Connelly
6	Downtown Wilmington	NC 5 currently aligns with NC 3 through downtown Wilmington, ending at Fort Fisher	End NC 5 at intersection with NC 3 in downtown Wilmington. NC 3 already continues south through Fort Fisher. Ending NC 5 here will avoid confusion and simplify signage through Wilmington.		

NC 6- PIEDMONT SPUR

NC 6 through the greater Charlotte region requires significant improvements to be comfortable for cycling, but provides key links to the Lake Norman Bike Route, Carolina Thread Trail, and developing Red Line Trail

Shift eastern terminus of NC 6 southwest to its intersection with the proposed NC 2 reroute east of Liberty

Proposed NC 6 usiness makes use of locally-identified routes, existing facilities, and provides a link to downtown Charlotte, but will also require improvements to be safe for cycling

NC 6 - Proposed Route
Proposed Route System
NC 6 - Alternative Considered
Current Route System
State Park
Federal Land
0 10 20 Miles

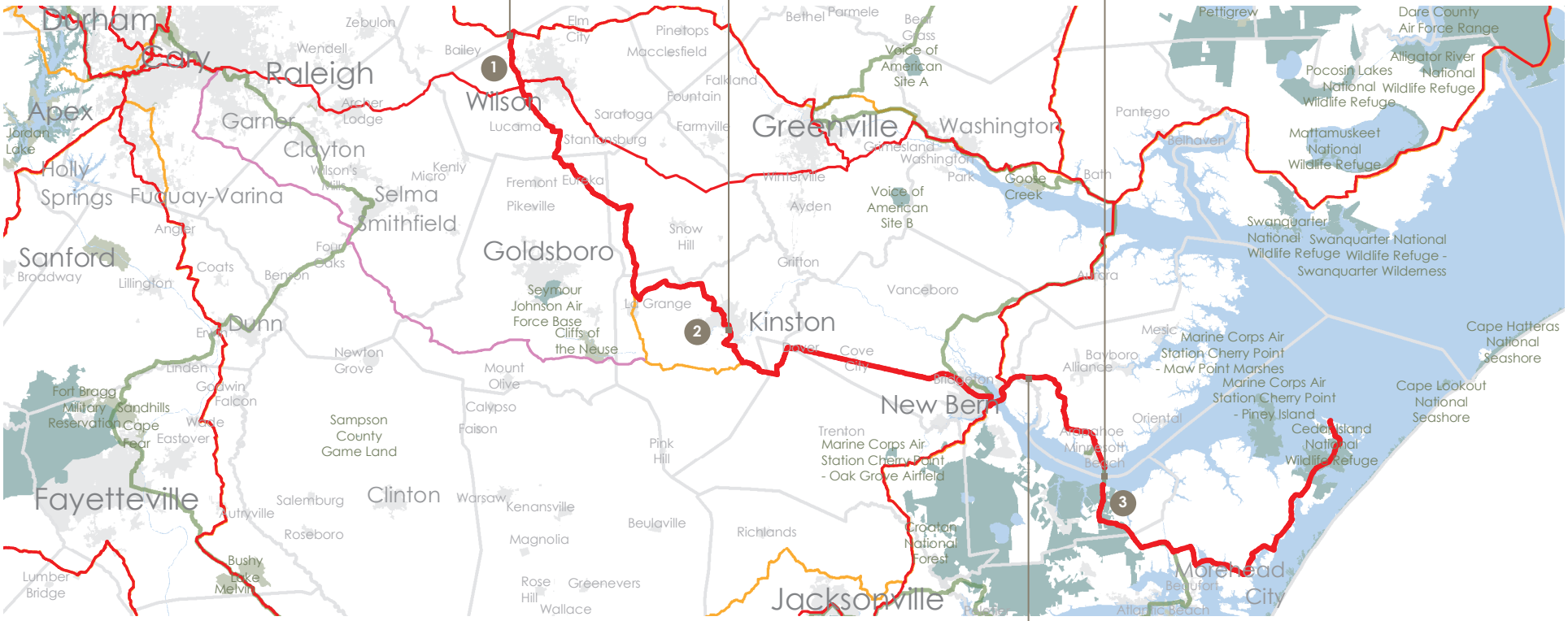
ID	Segment	Current Condition	Recommendation	Improvement Sections	Input Source(s)
1	From NC 2 intersection to intersection with NC Rt 16 near Lake Norman and Charlotte	Route is generally good through here, but improvements through downtowns needed; no dangerous sections flagged	No changes	Route through downtown Morganton needs improvement (S Sterling and S Green); same with E. Main St through Lincolnton	Cycles-Wright bike shop in Morganton; Ride-A-Bike bike shop in Lincolnton; Tony Goodnight
2	North of Charlotte - between NC 16 and NC 49	Very low level of service for a bicyclist; roads and towns through here have developed without bicycle accommodations; avoids downtown Charlotte	This entire section needs major improvements; the NC Rt 73 bridge over the Catawba River is scheduled to be improved with bicycle facilities sometime in the next 20 years. Highlight connectivity to the Lake Norman Bike Route system and surrounding towns. Also highlight Buffalo Shoals Rd as link toward the Lake Norman routes from Lincolnton. Highlight connections to Carolina Thread Trail and developing Red Line Trail north/south through Charlotte. Work with city officials, DOT engineers, and local cyclists to identify priority improvement sections.	*Prioritize - Vast majority of this section of the NC 6 Piedmont Spur between NC 16 northwest of Charlotte and NC 49 northeast of Charlotte	Matt Hartman; Tony Goodnight; Right Gear bike shop in Concord; The Spoke Easy in downtown Charlotte; John Boggiano; Bjorn Hansen; input map comments
2B	Business Route: Lincolnton southeast through downtown Charlotte to current NC 6 east of NC 49	This route was developed using a combination of local bike maps, bike lanes/ facilities, and local insight - it will also need improvements	This business route connects downtown Charlotte and avoids the worst parts of NC 6 north of Charlotte; however, segment will still need improvements. Work with city officials, DOT engineers, and local cyclists to identify priority improvement sections. Highlight connections to Carolina Thread Trail.	*Prioritize - The majority of this route will need improvements as well	Gaston County bike map; Charlotte/ Mecklenburg bike map; Central Carolina Cycling Club; Bjorn Hansen; Drew Skau; input map comments
3	From intersection with NC 49 northeast of Charlotte to terminus near Snow Camp, NC	This is generally a great route travelling through low traffic, rural, and scenic areas of the North Carolina piedmont.	Shift eastern terminus to the intersection with NC SBR 2 east of Liberty. Improvements to the NC 24/27 section and bridge must be highly prioritized - major re-routing adding much distance would be required to avoid this section, and it provides the best connection to the Uwahrrie National Forest and the rest of NC 6 Piedmont Spur. Otherwise, this is generally a great route, no other specific changes recommended.	*Prioritize NC Rt 24/27 section and bridge over the Pee Dee River. It is not safe for bicyclists and should be a high priority - bridge has limited space, high traffic volumes, and low walls.	Matt Hartman - Central Carolina Cycling Club, pesident; Tony Goodnight; Alan Johnson; Right Gear bike shop in Concord; Central Park bike route meeting; fieldwork

NC 7- OCRACOKE OPTION

NC 7 links the current NC 2 route as well as the proposed NC 2 Business route

Connect to historic downtown Kinston

Take the Cherry Branch-Minnesott Beach Ferry to cross the Neuse River



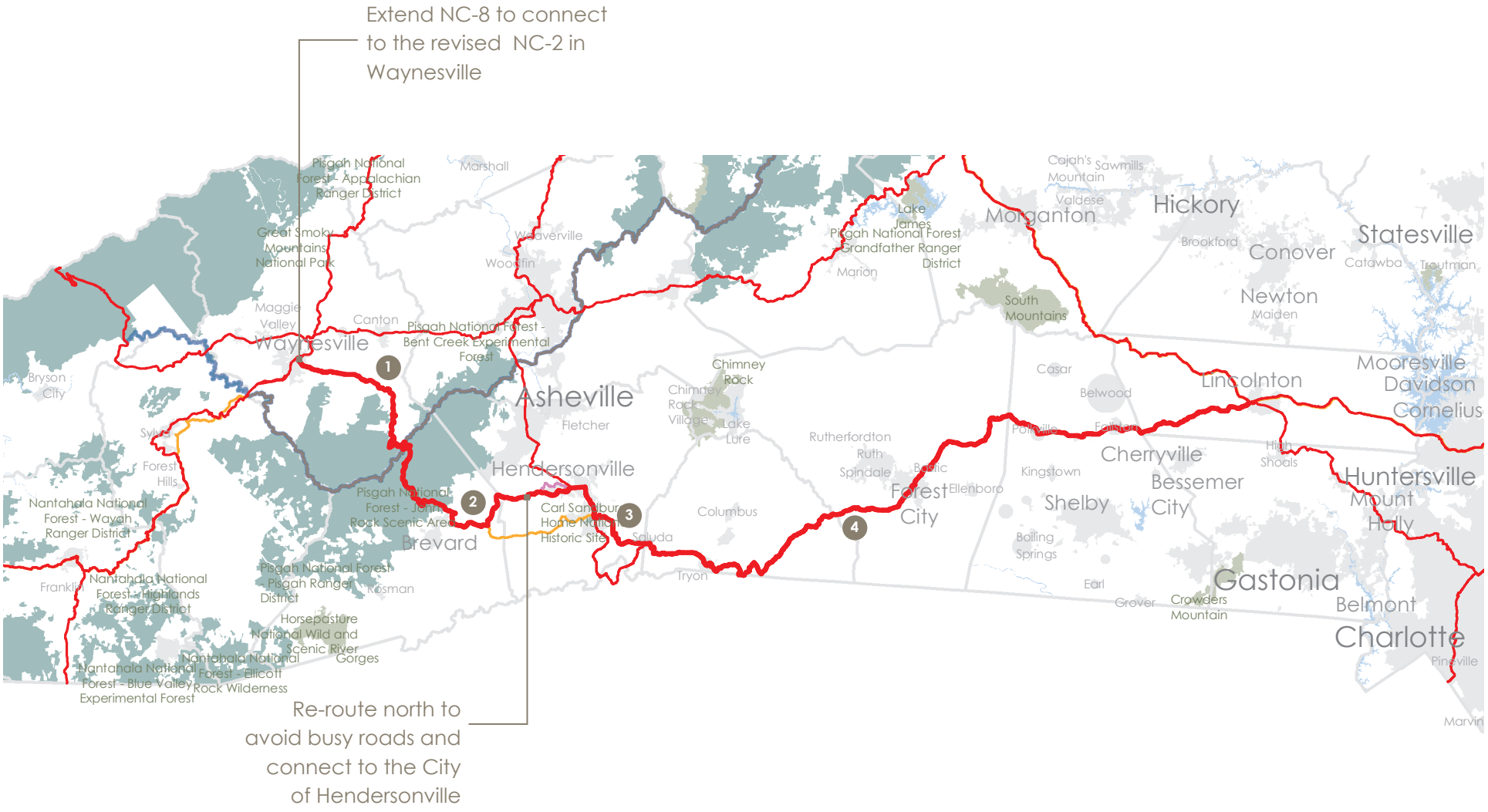
The route currently overlaps with both the East Coast Greenway and the Adventure Cycling Association's Atlantic Coast Route along some segments. Provide clear wayfinding at intersections with these routes.

NC 7 - Proposed Route
NC 7 - Alternative Considered
Proposed Route System
East Coast Greenway
Current Route System
State Park
Federal Land

0 10 20 Miles

ID	Segment	Current Condition	Recommendation	Improvement Sections	Input Source(s)
1	Intersection with NC 2 near Wilson to New Bern	This route generally follows roads suitable for cyclists; this section avoids Kinston, adding distance	No changes besides re-routing through downtown Kinston. See below. Highlight connections with ECG.	*Prioritize Neuse Blvd entering New Bern	Lenoir County bike map; Riverside Bicycles and Outdoor Sports in Kinston; Mike Dayton; Croatan field work
2	Through downtown Kinston	This route takes NC 7 through downtown Kinston and is more direct; improvements will be needed in connecting through downtown	Re-route NC 7 through downtown Kinston	*Prioritize Carey Rd into downtown - 4-lane into Kinston; NC 258 leaving Kinston to the south - 4 lane road, traffic	Lenoir County bike map; Riverside Bicycles and Outdoor Sports in Kinston
3	New Bern to the Cedar Island Ferry and Ocracoke Island	This route aligns with the ECG until north of Beaufort; then aligns with the ACA Atlantic Coast route to the Cedar Island Ferry	No changes, but improvements needed. Highlight connections with ECG. Highlight connection to and amenities located in town of Oriental.	*Prioritize US 17/NC Rt 55 bridge over the Neuse River. It is designed for high speed traffic; Paved shoulder generally needed	Croatan Trails Plan fieldwork team; Atomic Cycles bike shop in New Bern; Mumfest public engagement; Doug Sligh; Dave Connelly; input map comments

NC 8- SOUTHERN HIGHLANDS



9.3

ID	Segment	Current Condition	Recommendation	Improvement Sections	Input Source(s)
1	Western Terminus Extension: From new NC 2 in Waynesville to the Blue Ridge Parkway and current NC 8 via US 276	276 is a mountainous route, limited shoulder - only direct connection from new NC 2 to current NC 8	Use US 276 to make this connection. Make improvements to this road.	Paved shoulder generally needed	Sycamore Cyles bike shop in Brevard; Sycamore Cycles bike shop in Hendersonville
2	Blue Ridge Parkway to Hendersonville area	The Crab Creek Rd section of current NC 8 is narrow, curvy, and contains heavy traffic at times; skips Hendersonville; better routing option to the north	Eliminate Crab Creek Rd section. Re-route to the north and connect to downtown Hendersonville.	Add shoulder to US 276; improve 5th Ave into Hendersonville	Sycamore Cyles bike shop in Brevard; Sycamore Cycles bike shop in Hendersonville; Joe Sanders; Tamara Sanders; input map comments
3	South of Hendersonville toward Saluda	US 176 of the current NC 8 is curvy and narrow with traffic but direct	Keep route the same, but improvements should be a priority. Highlight connection towards South Carolina and routes such as the Swamp Rabbit Trail and Crescent Route.	*Prioritize US 176 between Hendersonville and Saluda in addition to South Main St leaving downtown Hendersonville and NC Rt 225;	Sycamore Cyles bike shop in Brevard; Sycamore Cycles bike shop in Hendersonville; input map comments
4	Saluda to NC 8's eastern termus in Lincolnton	This route is generally rural with limited traffic and good riding conditions	No change	US 176 between Saluda and Tryon: needs improvement through Saluda - generally a narrow road; add paved shoulder where possible	Sycamore Cyles bike shop in Brevard; Sycamore Cycles bike shop in Hendersonville; input map comments

NC 9 - SANDHILLS SECTOR

Split route west of Aberdeen to provide two options - NC Highway 5 to head north to US bike route 1 and Addor Road to head south to US bike route 1. This re-route also avoids using NC Route 211east of Aberdeen, which offers poor bicycling conditions.

The vast majority of the Sandhills Sector remains pleasant and scenic today

NC 9 - Proposed Route
NC 9 - Alternative Considered
Proposed Route System
Current Route System
East Coast Greenway
State Park
Federal Land

0 10 20 Miles

9.3

ID	Segment	Current Condition	Recommendation	Improvement Sections	Input Source(s)
	General		Designate Sandhills Sector as NC 9		
1	From the Sandhills Sector's western terminus at the Pee Dee River to its eastern terminus in Cumberland County	This route is generally rural with low traffic - pleasant riding conditions	Besides minor shifts near its intersection with US BR 1 (see below) no changes.		Tony Goodnight; John Mueller at Rainbow Cycles
2	Aberdeen area	Better route through downtown in crossing US Hwy 1 (road) and connecting with US 1 (bike route). Avoid NC Rt 211 through here.	Re-route using NC Rt 5 through downtown Aberdeen to connect north to US BR 1. Make change utilizing Addor Rd and routing through Pinebluff to route South to US BR 1 and the eastern segment of the Sandhills Sector. Sandhills Sector should split on Roseland just west of Aberdeen.	Downtown Aberdeen	John Mueller at Rainbow Cycles

NC 10 - TRIAD-CHARLOTTE (NEW)

Provide a new route through both downtown Winston-Salem and downtown Greensboro, which then funnel together to connect to Charlotte

The Thomasville connector provides a more scenic, rural option with less traffic, while the route via Lexington is more direct and connects towns/urban centers. Both routes should be designated as part of the system.

Given the density of development in Charlotte, this route requires improvements to be comfortable for cycling. It was selected as the best option based on local knowledge.

Connect the routes in both Thomasville and Lexington

NC 10 - Proposed Route
Proposed Route System
NC 10 - Alternative considered
Current Route System
State Park
Federal Land
Miles 0 10 20

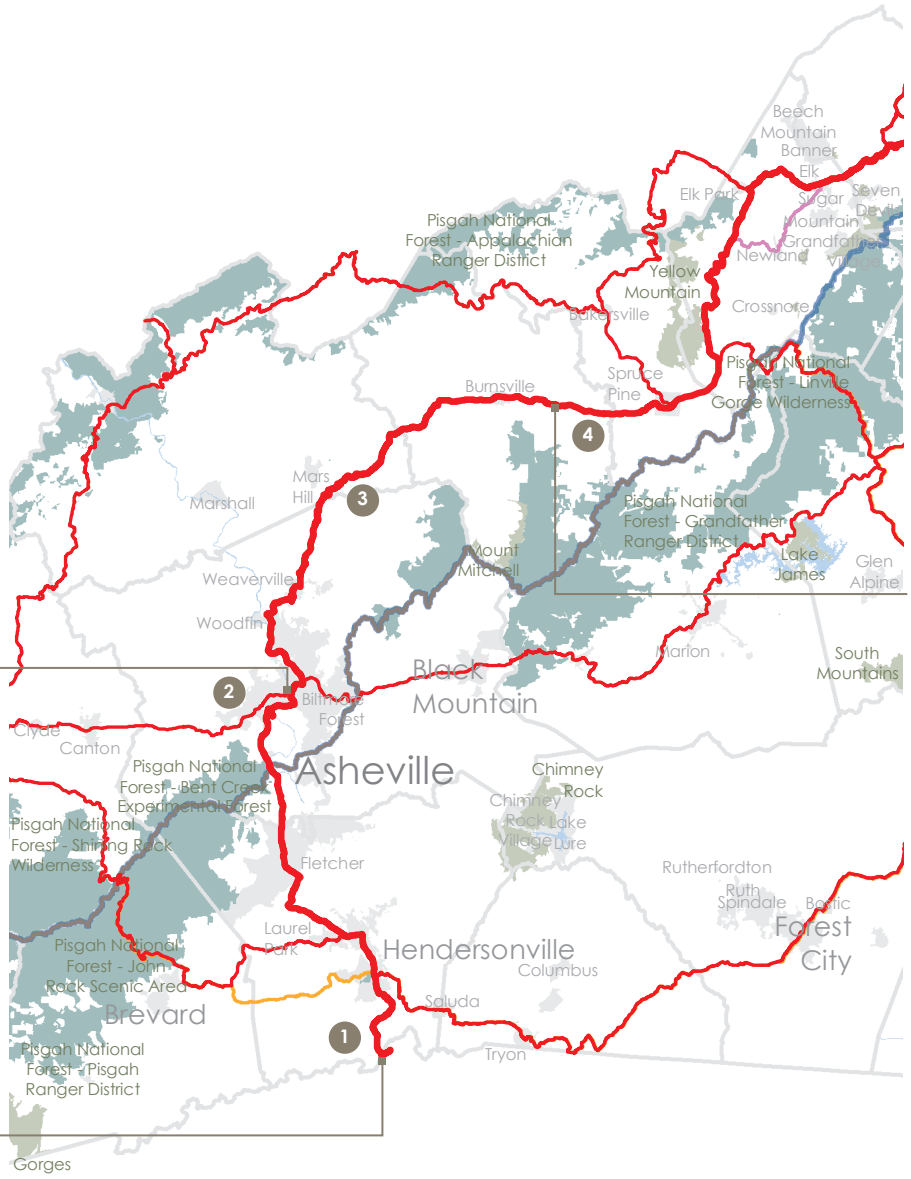
9.3

ID	Segment	Current Condition	Recommendation	Improvement Sections	Input Source(s)
	General		Assign this route as NC 10		
1W	NC 10 (WS): Virginia border to downtown Winston-Salem	Route provides north/south route through Winston-Salem and between the VA border and downtown Winston-Salem.	Highlight connections to Winston-Salem City Bike Routes. Highlight connection to NC 4 North Line Trace. Call this route NC 10 WS. Highlight connections to Stuart, VA and Martinsville, VA.	*Prioritize Glenn Ave; Old Rural Hall Rd; Old Hollow Rd; Baux Mountain Rd;	Mock Orange Bikes - Winston Salem; Winston-Salem/Forsyth County bike map; Tony Goodnight
1G	NC 10 (G): Virginia border to downtown Greensboro	Route provides north/south route through Greensboro and between the VA border and downtown Greensboro.	Highlight connections to Greensboro City Bike Routes. Yanceyville Rd is long and narrow - important north/south connector that needs improved. Highlight connection to NC 4 North Line Trace. Also highlight connections to Martinsville, VA and Danville, VA. Call this route NC 10 G.	*Prioritize US 158 as well as Yanceyville Rd	Bill Davis at Reidsville Bicycles; Aaron Daniel - Greensboro Velo Club president; Greensboro bike map
2W	NC 10 (WS): Downtown Winston-Salem to Lexington via Welcome	Provides connection between downtown Winston-Salem and southerly routes.	Designate this connection to Lexington. Highlight connections to Winston-Salem City Bike Routes. Highlight connections to NC 2 east/west routes.	*Prioritize S Maint St (WS) as well as Leonard Rd and Rt 8 (Lexington)	W.S./Forsyth County bike map
2G	NC 10 (G) Greensboro to Lexington via Thomasville	This route goes directly through Thomasville en route to Lexington on higher traffic roads; allows for connection to country route heading from Thomasville to Concord	Designate this connection from downtown Greensboro to Lexington via Thomasville and High Point. Highlight connections to Greensboro City Bike Routes. Highlight connections to NC 2 east/west routes.	*Prioritize the following: Market St in downtown Greensboro; Between High Point and Thomasville - NC Rt 68; Burton Ave; another section of NC Rt 68; National Hwy; Unity St; and Salem St (downtown); Between Thomasville and Lexington - highlight roads, especially at the entrance/exit of Thomasville and Lexington (Lexington Ave out of Thomasville, Rt 8/Main St in downtown Lexington)	Aaron Daniel - GVC president; Greensboro bike map; High Point bike map; Bike Toy and Hobby bike shop in High Point; Davidson County bike map; C. Scott Leonard - Davidson County Planner, Central Park bike route proposals

ID	Segment	Current Condition	Recommendation	Improvement Sections	Input Source(s)
3W	NC 10 (WS): Lexington to Concord	Direct route from Lexington to Concord via Salisbury. Shorter distance but with lower bicycle level of service. Improvements along this route should be a high priority.	Utilize this route as a direct option through the cities and towns connecting the Triad and Charlotte regions.	*Prioritize all of the following: Lexington to Salisbury section (the majority of this section contains higher traffic with limited bicycle facilities), the section between Lexington and I85, downtown Salisbury (except for Rowan Ave thru town) to the Yadkin River bridge, Salisbury to Concord (similary, higher traffic with limited bicycle facilities, especially closer to the entrance/exit to Salisbury and Concord)	Davidson County bike map; C. Scott Leonard - Davidson County Planner, Central Park route proposals, Matt Hartman - president, Central Carolina Cycling Club; Tony Goodnight
3G	NC-10 (G): Thomasville to Concord	Scenic alternative route from Thomasville to Concord. This route is rural, traverses lower traffic roads, and is generally characterized by pleasant riding conditions.	Utilize this route as a scenic alternative between the Triad and Charlotte regions.	*Prioritize the following: 109 and Liberty Dr leaving Thomasville; Bingle Ferry Rd bridge; Old Salisbury/ Concord into Concord	Davidson County bike map; Davidson County Planner C. Scott Leonard, Central Park route proposals, Matt Hartman - president, Central Carolina Cycling Club

ID	Segment	Current Condition	Recommendation	Improvement Sections	Input Source(s)
4	Through downtown Charlotte to SC border	This route highlights the challenge of bicycling through downtown Charlotte. This route is the best option identified by local bicyclists, but utilizes several roads that are characterized by lower bicycle levels of service. Prioritize this important connection through downtown.	Connect through downtown Charlotte. Highlight connections to Carolina Thread Trail as well as NC 6 Piedmont Spur. Make improvements to this route a high priority. Highlight connections to SC routes.	*Prioritize all of the following: From Pineville to downtown Charlotte - North Polk St/South Blvd near Pineville, England St, Hebron St, College St through downtown; Downtown to Concord - N Davidson St, Dinglewood/ Eastway Dr intersection, Eastway Dr, Old Concord Rd, Grier Rd, Rocky River Rd, Roberta, and Old Charlotte	Matt Hartman and fellow Central Carolina Cycling Club members; Carolina Bicycle Company in Pineville; Bjorn Hansen; Drew Skau

NC 11 - MOUNTAIN ROUTE (NEW)



Route links to NC 2 in downtown Asheville

NC 11 begins at the South Carolina border, creating an opportunity for connections to the Swamp Rabbit Trail and SC's Northern Crescent Route.

Proposed connector follows the mountains of western North Carolina, linking its historic mountain towns

NC 11 - Proposed Route
NC 11 - Alternative Considered
Proposed Route System
Current Route System
Blue Ridge Parkway
State Park
Federal Land

0 10 20 Miles

9.3

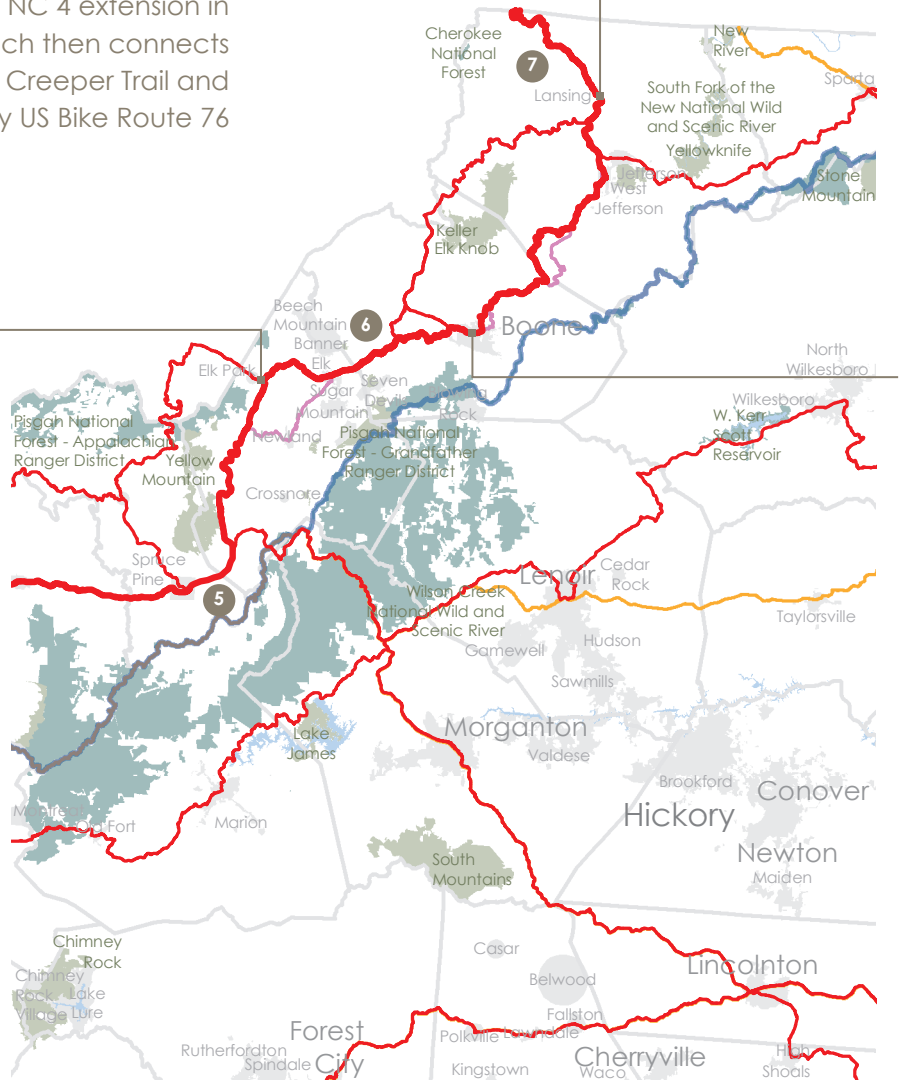
ID	Segment	Current Condition	Recommendation	Improvement Sections	Input Source(s)
	General		Assign this route as NC 11		
1	SC border to Hendersonville	This route begins at the South Carolina border on Old US Hwy 25 which provides pleasant riding conditions generally until NC Rt 225. NC Rt 225 to Flat Rock is windy and narrow with traffic. High traffic volumes into downtown Hendersonville.	Utilize this route to connect Hendersonville. Highlight connections to routes in South Carolina - Swamp Rabbit Trail in Travelers Rest and SC's Northern Crescent Route. Highlight connection to NC 8 Southern Highlands. Highlight connection to Saluda/ SC connector.	NC Rt 225; Main St (Hendersonville)	Sycamore Cyles bike shop in Brevard; Sycamore Cycles bike shop in Hendersonville; Joe Sanders; Tamara Sanders; input map comments
2	Hendersonville to Asheville	This route links downtown Hendersonville and downtown Asheville.	Follow Haywood/Brevard Rd to make this connection. However, note that Howard Gap to the east is scheduled for bicycle improvements as part of a future modernization project. Adjust accordingly if this becomes the preferred route.	*Prioritize Improvements to Brevard/Haywood Rd	Liberty Bicycles bike shop in Asheville; Sycamore Cycles bike shop in Hendersonville; Kieran Roe; Lyuba Zuyeva; input map comments
3	Asheville to Burnsville	This route makes a direct connection through the center of several mountain towns. Paint Fork Rd has a steep section called 'the wall'. This route is challenging, scenic, and direct.	Utilize this route through Weaverville en route to Burnsville. Highlight steep section along Paint Fork Rd called 'the wall'.	*Prioritize the following: Improve Broadway and Riverside Dr heading north out of Asheville; 19E in the Burnsville area; Old Mars Hill Hwy north of Weaverville in addition to Weaverville thru-roads.	Sam White at Liberty Bikes, Blue Ridge Bicycle Club, local cyclist Randy Raskin, Youngblood Bicycles, and Asheville/ Buncombe County bike map
4	Burnsville to Spruce Pine	This section currently provides a low bicycle level of service.	Follow 19E straight from Burnsville to Spruce Pine. 19E currently carries high truck traffic, but the only alternatives add significant distance. Utilize this section and prioritize improvements. Aligns with segment 4 of the HCCOG Bike Plan (Draft).	*Prioritize this section of 19E. It is currently being resurfaced and will include wide shoulders but no striping for bicyclists.	Randy Raskin; Phil Trew; HCCOG Bike Plan Draft; Solstice Cycles bike shop - Burnsville

NC 11 - MOUNTAIN ROUTE (NEW)

The proposed route links to the proposed NC 4 extension in Lansing, which then connects to the Virginia Creeper Trail and ultimately US Bike Route 76

Proposed route provides the opportunity for a short spur through Elk Park to Tennessee

Proposed route links Boone and West Jefferson



NC 11 - Proposed Route
NC 11 - Alternative Considered
Proposed Route System
Current Route System
Blue Ridge Parkway
State Park
Federal Land

0 10 20 Miles

9.3

ID	Segment	Current Condition	Recommendation	Improvement Sections	Input Source(s)
5	Spruce Pine to Banner Elk	Generally pleasant riding conditions, connects through Elk Park.	Utilize this route via Elk Park. Highlight connection to Tennessee west of Elk Park. Highlight intersection with NC 2 Alternative Route. Highlight intersections with HCCOG Bike Plan routes. Aligns partially with segment 9 and completely with segments 10 and 12 of the HCCOG Bike Plan (Draft).		Randy Raskin; Phil Trew; HCCOG Bike Plan Draft; Solstice Cycles bike shop - Burnsville; Magic Cycles bike shop - Boone
6	Banner Elk to West Jefferson via Boone	Direct route from Banner Elk to Boone to West Jefferson; NC 194 is good for cycling up to Valle Crucis, 194 north of Boone is a busy section, narrow	Utilize this route to connect Banner Elk, Boone, and West Jefferson. Highlight connections with HCCOG Bike Plan (Draft). Aligns with segment 18 of the HCCOG Bike Plan, partially with segment 24, 29, and 28. Highlight intersection with NC 4 North Line Trace.	*Prioritize King St through downtown Boone as well as NC Rt 194 north of Boone	Randy Raskin; Phil Trew; Magic Cycles bike shop - Boone; Paul Stahlschmidt (Boone Area Bicyclists)
7	West Jefferson to Lansing to the Creeper Trail Connection	Quiet back roads along abandoned rail line that connects with the Creeper Trail bike path at the Virginia border	Good connector - rural and scenic roads, low traffic volumes.		

Cyclist Waiting Areas

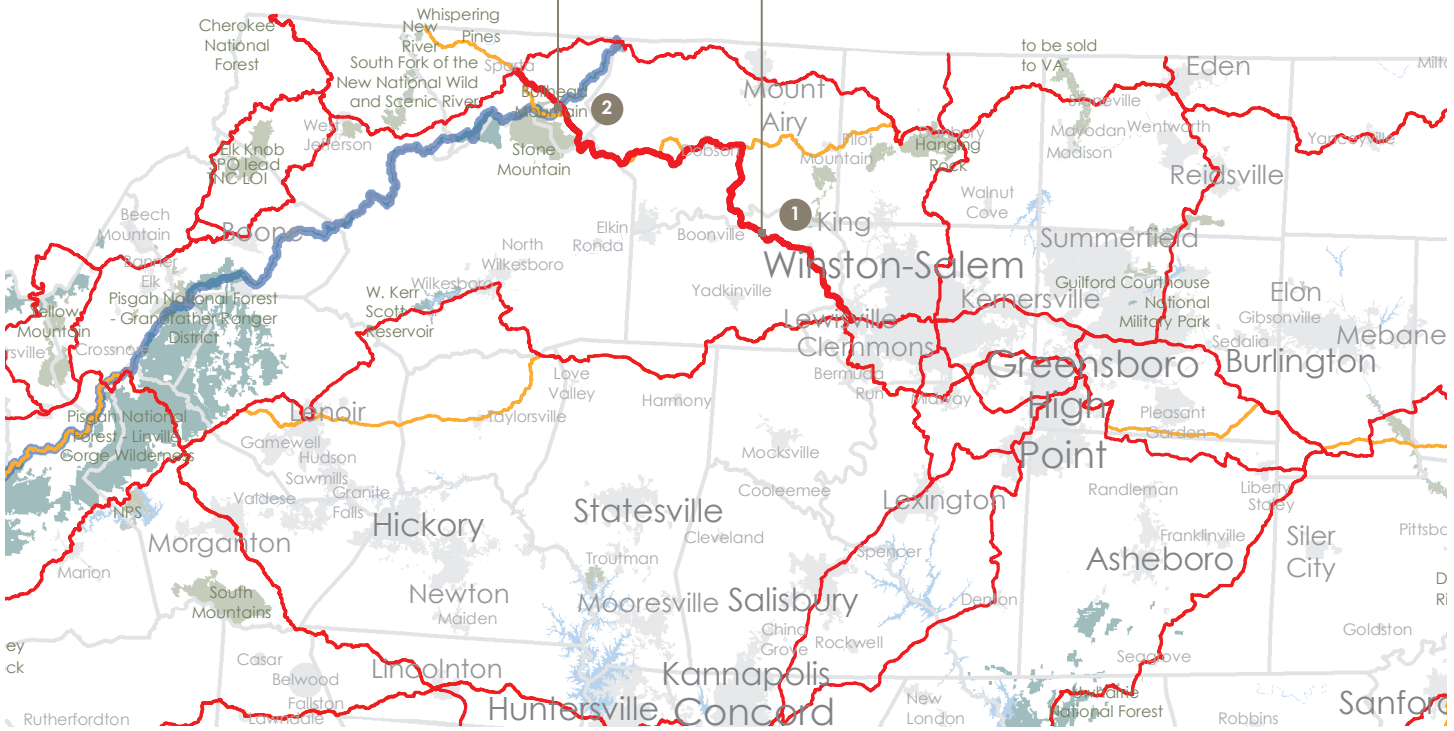
Steep hills and mountain roads are often places where limited shoulder and narrow overall road widths occur for significant distances. Cyclists climbing these sections of road will be traveling at slower speeds. Even with lower traffic volume levels, cars may have difficulty passing cyclists, and traffic may begin to accumulate behind a cyclist. Limited sight lines, narrow roadway widths, and steep grades contribute to this problem. Because of steep drop-offs and geographical constraints, a cyclist may not have the opportunity to pull off to the side of the road and allow cars to pass. As a result, a line of cars may begin to form, slowly following the cyclist up the mountain. With cars sometimes traveling at higher speeds downhill in the opposite direction, opportunities to pass a cyclist (or group of cyclists) can be dangerous.

Cyclist waiting areas or periodic segments of paved shoulder are solutions that can ameliorate this problem. These have been implemented in mountainous places such as Colorado. Cyclist waiting areas provide temporary refuge along the ascent of steep roads where cyclists will be able to shift further to the right or pull over altogether, allowing a line of cars to pass. These may be more feasible solutions in places where geographical constraints and/or funding may limit the addition of paved shoulder. The picture to the near right shows an example of a cyclist waiting area space. To the far right is a signage example of what could be included in these areas. The expanded state bicycle route system includes a new route through the heart of the mountains of western North Carolina, and this type of bicycle facility is recommended as needed.

NC 12 - YADKIN VALLEY CROSSING (NEW)

This link to the northwest corner of NC utilizes US 21 in connecting the piedmont to the mountains past Stone Mountain State Park and the Blue Ridge Parkway

This section through the Yadkin River Valley passes several vineyards which are popular destinations through this unique region; also provides link to the Triad

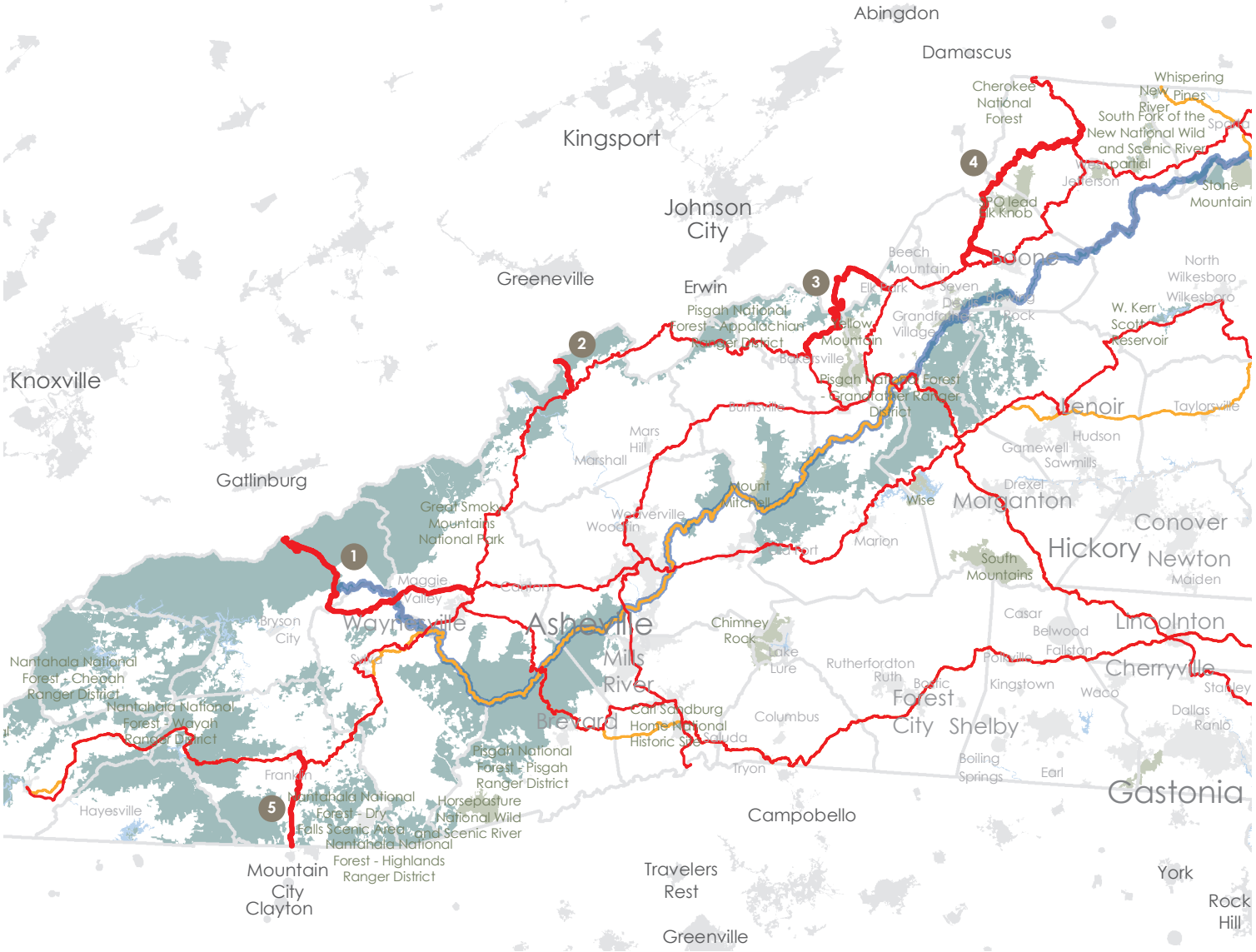


NC 12 - Proposed Route
Proposed Route System

9.3

ID	Segment	Current Condition	Recommendation	Improvement Sections	Input Source(s)
	General		Assign this route as NC 12		
1	Triad through Yadkin Valley Northwest Connection	This route is generally rural, meandering through the Yadkin River Valley and accompanying vineyards. Establishes a northwest link between the mountainous northwest corner of NC and routes leading to the beaches of NC's southeast corner.	Add this route to complete a link toward NC's northwest corner. Connect the Triad urban population center to rural and scenic cycling routes through Surry County and the Yadkin Valley heading northwest into the mountainous region of North Carolina. Connections to the Triad and other NC state bike routes can be made through Lewisville and NC 2.		Tony Goodnight; Mapmyride; Forsyth County Bike Map; Input Map comments
2	Northwest Link	This section establishes a northwest link to the mountainous northwest corner of NC. While this route stays off the Blue Ridge Parkway, US 21 is a challenging climb toward Sparta. US 21 is a narrow road.	Utilize this connection to NC 4 and the northwest region of NC through Sparta. This route stays off the Blue Ridge Parkway, utilizing US 21 in linking the western piedmont to the Appalachian region of western NC.	US 21 in the Stone Mountain State Park area - narrow road with steep climb past the BRP from the southeast. Cyclist waiting areas (pg 10.3-54) are recommended at a minimum	Tony Goodnight; Brian Graham; Input map comments

ADDITIONAL CONNECTIONS



Proposed Connector Route
Proposed Route System
Current Route System
Blue Ridge Parkway
State Park
Federal Land

0 10 20 Miles

9.3

ID	Segment	Current Condition	Recommendation	Improvement Sections	Input Source(s)
1	Tennessee Connector: Through the Smokies to Gatlinburg	If Tennessee extends a connector through Gatlinburg, TN toward the Great Smoky Mountains National Park, this route would link North Carolina to Tennessee via US 421 and US 19 from Lake Junaluska.	Include this connector to provide access to the Great Smoky Mountains National Park and create another linkage to the Tennessee state bike route system. Coordinate with TDOT.	*Prioritize: This is a higher traffic section. Improvements needed on US 441 and US 19	Tennessee state bike route system
2	Tennessee Connector: Hot Springs to Greeneville	If Tennessee extends a connection south from Greeneville, TN to the North Carolina border, this link would utilize NC Rt 208.	Include this connector to provide a link to Tennessee's Chattanooga-to-Mountain City route. Coordinate with Tennessee DOT.		Tennessee state bike route system
3	Tennessee Connector: Bakersville to Elk Park via Tennessee/Roan Mt	If Tennessee extends a link from its Bicycle Ride Across Tennessee (BRAT) system, this link would utilize US 19E from Elk Park, NC and NC Rt 261 from Bakersville, NC.	Include this link to make short connection to Roan Mountain, TN and Tennessee's BRAT system. Coordinate with TDOT.		Tennessee state bike route system
4	Tennessee Connector: Valle Crucis/Boone area through Tennessee to Lansing, NC	If Tennessee extends a connection from Mountain City, TN toward the NC border, this link would utilize Mast Gap Rd from and Old US 421 through Tennessee to NC Rt 88 along the North Fork of the New River. Partially aligns with segment 22 and completely with segments 19 and 26 of the HCCOG Bike Plan (Draft).	Include this link to make connection from Boone and Lansing areas to the Tennessee border and potentially Tennessee's Chattanooga-to-Mountain City route. Coordinate with Tennessee DOT.	Narrow roads but generally low traffic volumes; paved shoulders generally needed; improvements needed for section of US 421 near Boone	Randy Raskin - local cyclist and route planner; Phil Trew (HCCOG Bike Plan); Magic Cycles bike shop - Boone
5	Georgia Connector: Franklin, NC to Georgia border	This link would utilize the US 441/US 23 corridor to directly connect to Georgia's state bike route system from Franklin, NC.	Include this link to complete Georgia connection.	Improvements needed for sections of US 441/23	Georgia state bike route system

* These connections provide key linkages to routes in Tennessee and Georgia where there is limited connectivity. US 1 and NC 2-12 provide several links to Virginia and South Carolina routes and cities.

Signage Replacement

North Carolina's current state bicycle route system was developed in the 1970's and signed later in the 1980's. While certain sections of the current system have consistent signage, significant problems exist with the current scheme. They include the following:

- Current signage uses the symbol shown below, with each route differentiated by its number. County and local route systems often use an identical style, making them difficult to distinguish. The photograph at right shows a signpost that has both a state bicycle route (NC 2 – Mountains to Sea) and a county route. Nothing on the signs distinguishes the state bicycle route from the county route, easily leading to confusion.
- Cyclists have reported missing signage throughout the system. Areas where new development has occurred since the original signage installation often lack replacement signs.
- Current signage does not provide additional information such as distance to the next town or connections to local and regional routes.

This update to the state bicycle route system offers an opportunity to install an effective signage scheme across the state. Appropriate information should be included on each sign panel and panels installed at strategic locations as described in the best practices outlined on the following pages. Where current signage exists, signage panels should be removed and replaced with updated signs. The following criteria should guide the prioritization of sign placement and replacement:

1. Install signs where currently missing
2. Replace signs at junctions with regional and local routes
3. Replace signs within incorporated areas
4. Replace signs within ten miles of incorporated areas
5. Replace remainder of signs

NCDOT divisions should maintain comprehensive inventories of the locations and ages of signs and replace as needed on an ongoing basis.

Signage Recommendations

Based on feedback from cyclists around the state and a review of best practices, an updated and enhanced wayfinding system is proposed for the state bike route system. Recommended improvements are listed below:

INCREASE THE FREQUENCY OF SIGNS IN ACCORDANCE WITH CURRENT BEST PRACTICES

- Cyclists approaching a route junction need an advance warning sign, directing them if and where they should turn off.
- Riders also look for reassurance after the junction that they are still on the correct route.
- Signs should be visible from a distance of 100 feet prior to approach.
- On steep downhill segments, the sign should be placed further upstream from the intersection to provide a cyclist adequate time to make a directional decision. Signs should also be placed further from the intersection on busier streets with a center turn lane or left turn pocket to decrease the possibility of conflicting cyclist/motorist movements while preparing for a left turn.
- Place Bicycle route markers with "straight-ahead" arrows periodically on straight stretches.

INCORPORATE DESTINATIONS INTO THE WAYFINDING SYSTEM

- Show destination, direction, and distance for destinations along the route. Destinations can be included all on one panel along with the bicycle route symbol and number.
- Follow the rule of continuity: once a destination is stated it should be included on every sign until it is reached

DISTINGUISH 'BUSINESS' BIKE ROUTES FROM STANDARD ROUTES

- Add a 'B' or 'C' after the route number along business route and connector route sections respectively, such as the proposed NC 2 business route connecting Downtown Greensboro, High Point, and Winston-Salem and connector route between Greensboro and Winston-Salem.
- Clearly indicate the direction of business routes versus rural routes at forks in the system.

PROVIDE CONNECTIONS TO LOCAL, REGIONAL, AND OTHER SIGNIFICANT ROUTES

- Place similar destination signs at junctions with other bike routes that reach destinations off of the state bike routes.
- Provide clear, distinctive crossing signs at intersections with major routes such as the East Coast Greenway, the Blue Ridge Parkway, and the Lake Norman Bike Route.
- Distinguish between state bike routes and local or regional routes with sign types. Local routes should use a distinct color and/or shape from that of the

An example of wayfinding signage in Portland, OR; www.pedbikeimages.org / Brad Crawford ▶

National Wayfinding Signage Guidance[3]

MUTCD

Some practitioners find the MUTCD signage system unwieldy and duplicative, especially where multiple bicycle routes cross. MUTCD requires both the use of the words "Bike Route" and a bicycle symbol on a bicycle route sign, then another panel showing the destination name, and another for the route number.

AASHTO

Bicycle route signs along designated bikeways include 'destination plates' directing cyclists to specific locations (e.g., downtown). In situations where a route is not officially designated as a bikeway, directional signage may still be used. Signs should be placed every 1,600 feet (500 meters), at all turns along the route, and at major signalized intersections.

NACTO

Recommends decision signs should include destinations, direction arrows, and distance. Travel time required to reach the destination provides bicyclists with additional information and may also be included. It is recommended that a 10 mph "urban average" bicycle speed be used for travel time calculations.

state bike route signs. Routes with unique signage, such as the Lake Norman Bike Route, should keep that signage for easy recognition and distinction. Include both signs with their distinct designs at crossings.

The Lake Norman Bike Route's signs will display the route's unique logo. Sign courtesy of the Lake Norman Regional Bicycle Signage Plan, lakenormanrpo.org/lake-norman-bike-route

SET UP ONGOING COMMUNICATION BETWEEN THE BICYCLE & PEDESTRIAN DIVISION AND LOCAL DIVISIONS RESPONSIBLE FOR SIGN MAINTENANCE TO ENSURE UPKEEP

- On the webpage where route guides are housed (see Route Guides recommendations), provide an online form for individuals to report missing or damaged signs.
- Assign one point person within the Bicycle & Pedestrian Division to field sign reports and communicate with local divisions to get the signs fixed or replaced. This point person should also coordinate the addition of route crossing signs when new local or regional routes are signed.

SIGNAGE INSTALLATION COSTS

- Types of signage needs for the state bike route system are varied and would need an in-depth study to obtain a comprehensive cost estimate. Warning, destination, regulatory, routing and other informational signage would be needed.

- However, a significant component of signage would include simple route identification signs, (similar to the Lake Norman Bike Route sign example on the previous page, but with a logo specific to the state bike route system) along every stretch of each route for a cyclist to follow. Based on current material and installation costs, and minimum size requirements, each routing sign would cost $158.75 to make and install.
- Calculating approximate routing sign needs for long stretches (generally every five miles for affirmation), urban areas (generally every two to three blocks for affirmation), and turns (generally four needed at each turn - each way, one to signal the turn and one to reaffirm correct route after turn). With an average of 1 sign per 1.875 miles for affirmation signage not along turns (assumes equal amounts of routing on roads anywhere between the rural and urban extremes), and an average of 1 turn (four signs needed) per 2.83 miles (this average was calculated from using NC 5 as a sample stretch), routing signage needs for the 3,800 miles of the recommended system would be 7,410 signs. Multiplied by $158.75, the total cost would be $1,176,337.50 for routing signage. It is important to note that this number does NOT consider other variable signage needs such as warning, destination, regulatory, and other informational needs, and this is a planning level cost estimate only.

Sources: Long-distance signage needs - Adventure Cycling association; signage dimensions - Manual on Uniform Traffic Control Devices (MUTCD) Chapter 9B; urban signage needs - National Association of City Transportation Officials (NACTO) guidelines; pricing - North Carolina Department of Transportation (NCDOT)

Route Guides

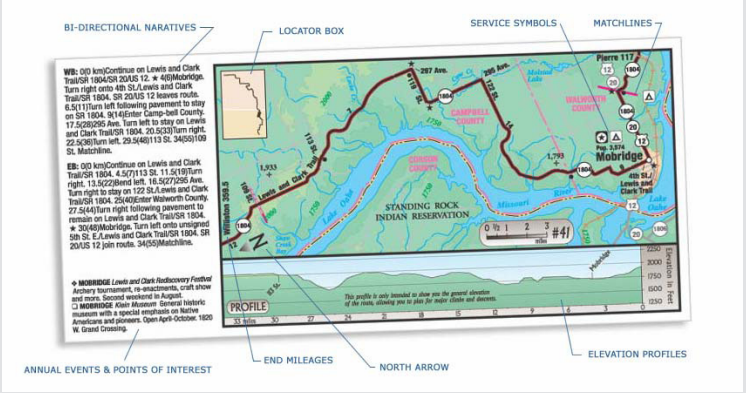
The current guides for the state bike routes should be improved and supplemented in several ways. The following improvements are recommended:

MAKE ROUTE GUIDES AVAILABLE FOR DOWNLOAD ON THE BICYCLE & PEDESTRIAN DIVISION'S WEBSITE

- Provide route maps in printer friendly PDF form for download. NCDOT will be able to reduce paper usage by allowing public to print as needed.
- Provide interactive route maps that can be viewed on a computer or a smart phone. These maps should include the basic points of interest and services along with the routes themselves with basic pan/zoom capabilities.

Adventure Cycling Association Route Guides

The Adventure Cycling Association's (ACA) route guides are an industry model. These guides provide 30-40 mile map panels with associated turn-by-turn directions and detailed service information. Their clear, concise maps show elevation information in the form of contours or elevation profiles, distances between destinations, and zoom-ins of tricky intersections, along with the basics. The full guides provide a service directory for towns and cities along the route, climate information, and scenic and cultural descriptions of the landscape. These maps are made available for purchase on the ACA website.



▲

Route map images available at www.adventurecycling.org/routes/

MAKE GPX OR SIMILAR FILES OF EACH ROUTE AVAILABLE FOR DOWNLOAD ON THE BICYCLE & PEDESTRIAN DIVISION'S WEBSITE

- Select a format for route files that are easily imported into common route planning applications, such as mapmyride.com.
- Consider smartphone application development.
- Keep route files up to date as routes are modified.

UPDATE GUIDES WITH ROUTING RECOMMENDATIONS FROM THIS PLAN AND CURRENT POINTS OF INTEREST, AND MODERNIZE MAPS FOR IMPROVED CLARITY

- Provide full-color, downloadable PDF maps with routes identified sharply against the background.
- Include turn-by-turn directions along with general route and destination descriptions.
- Indicate the presence or absence of the following points of interest by town: camping, bicycle shops, service stations, grocery stores, restaurants, hostels, hotels, bed and breakfasts.
- Show the locations of historic downtowns and sites, museums, other cultural attractions, and scenic areas.
- Show connections to local and regional routes.
- Indicate distances between towns or cities and include elevation profiles.

Amtrak Bicycle Service

Currently, the Piedmont, Carolinian, Crescent, and Silver Service/Palmetto Amtrak routes provide train service through North Carolina. However, only the Piedmont between Raleigh and Charlotte offers walk-on bicycle service, limited to 6 bicycles per train. For the other routes, bicycles may be checked in a bicycle container where checked baggage service is available. Where checked baggage service is unavailable, bicyclists have no opportunity to travel with their bicycle.

NCDOT should work with Amtrak to establish walk-on bicycle service on all Amtrak routes throughout North Carolina. Such a policy change will allow long-distance cyclists using the state bike route system to travel to their starting point by train and return by bicycle or vice versa.

Bicycle Storage on Amtrak's Piedmont Line ▶

9.3

Policy Support

North Carolina's Complete Streets policy recommends a multi-modal transportation network that safely accommodates access and travel for all users including bicyclists. However, legislation supported by this policy does not exist in North Carolina's General Statutes. Such a law, supported by the Complete Streets policy, is critical to the development of the statewide bicycle route system given the significant mileage of that system in need of improvement.

Wisconsin, Illinois, Florida, Oregon, and Massachusetts have all passed state laws that require transportation projects to safely accommodate access and travel for all users including bicyclists.[4] Wisconsin's Department of Transportation has conducted several studies finding that the benefits of paved shoulder bicycle facilities to both motorists and bicyclists outweigh the costs. They've since established a policy of including 5' paved shoulders on roads with ADT of 750 or more. These findings should guide improvements to North Carolina's statewide bicycle route system. For all state bicycle routes, as well as regional, county, and local routes, North Carolina should aim to have paved shoulder widths of 5 feet or greater on roads where ADT is 750 or greater. When funding resources are limited, roads where ADT is 1,200 (consistent with the goals of the original route system) or greater should be prioritized. While North Carolina's Complete Streets policy provides existing support for these recommendations, the state should consider their incorporation into transportation legislation. These improvements will enhance safety for both motorists and bicyclists, and it is recommended to include highway safety funds as a resource for implementation.

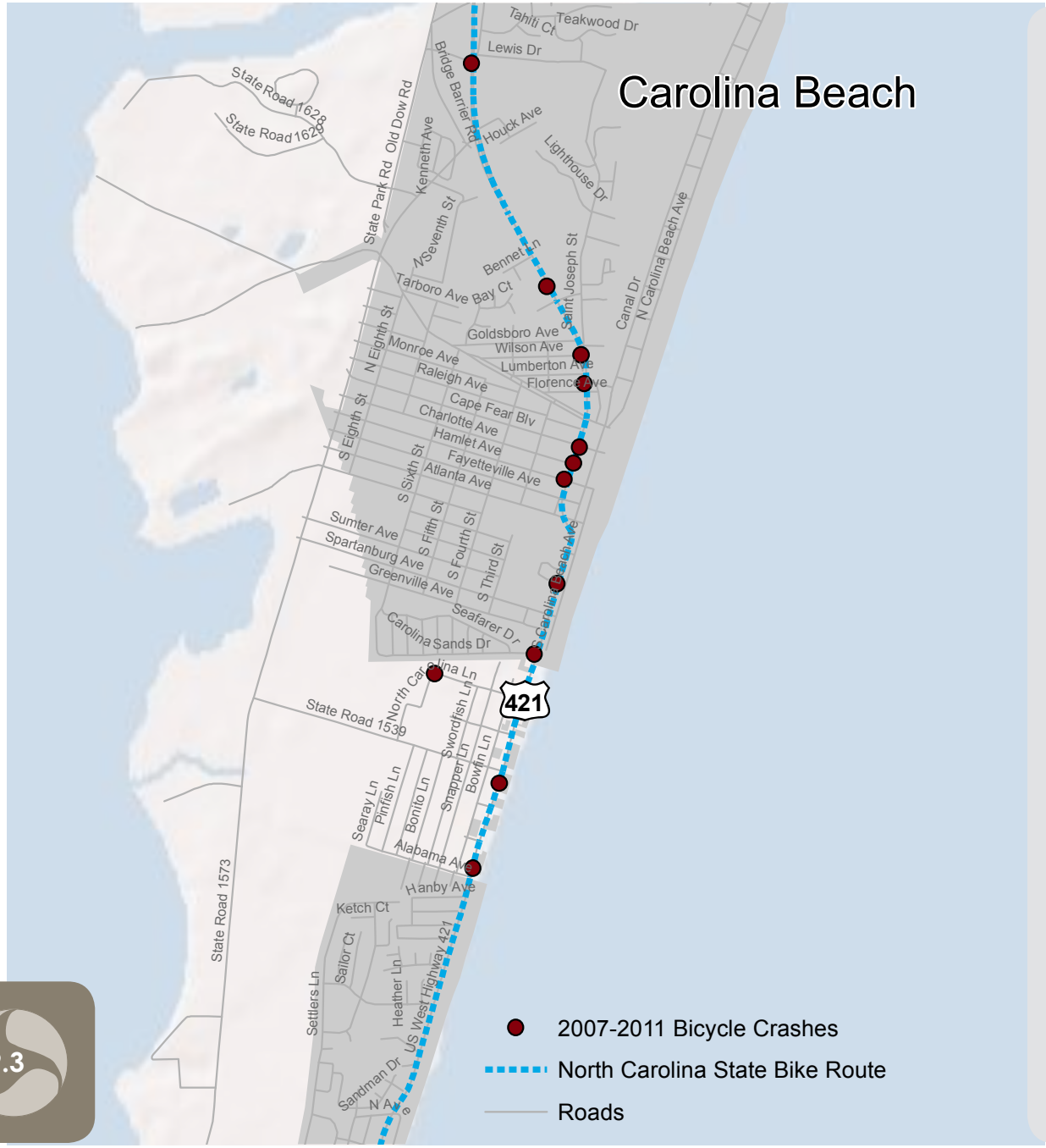
The Evolution of Wisconsin's Shoulder Paving Policy

Wisconsin's Department of Transportation (WisDOT) conducted a study in the 1980's to determine the fiscal and safety impacts of providing paved shoulders, citing benefits for cyclists as a secondary benefit. The findings of that study indicated that the addition of three-foot paved shoulders would be cost beneficial for roadways with ADT of 1,250 and above; savings are due to reductions in motor vehicle crashes and maintenance costs. This finding led to widespread shoulder paving in Wisconsin.[1]

In the 1990s, Wisconsin's shoulder paving policy was amended to paved shoulder widths of 5 feet or greater for highways exhibiting a need to accommodate bicyclists. Wisconsin then adopted a version of Complete Streets legislation in 2009 that requires bicycle and pedestrian facilities on all new and reconstructed projects and most pavement replacement projects.[2] This legislative effort is helping to drive the continued development of bicycle facilities across the state.

Due to the increased benefits of paved shoulders to both bicyclists and motorists, Wisconsin is now modifying its paved shoulder policy to include roads with ADT of 750 or more. Findings from WisDOT's bicycle level of service models point to the significance of these numbers; the doubling of ADT has about a 10-fold negative impact on bicycle level of service.[3]

1 NCDOT case study PDF
2 http://www.smartgrowthamerica.org/documents/cs/policy/cs-wi-legislation.pdf
3 http://www.dot.wisconsin.gov/projects/state/docs/bicycle-rural-guide.pdf



Strengthening Safety: Carolina Beach Crash Study

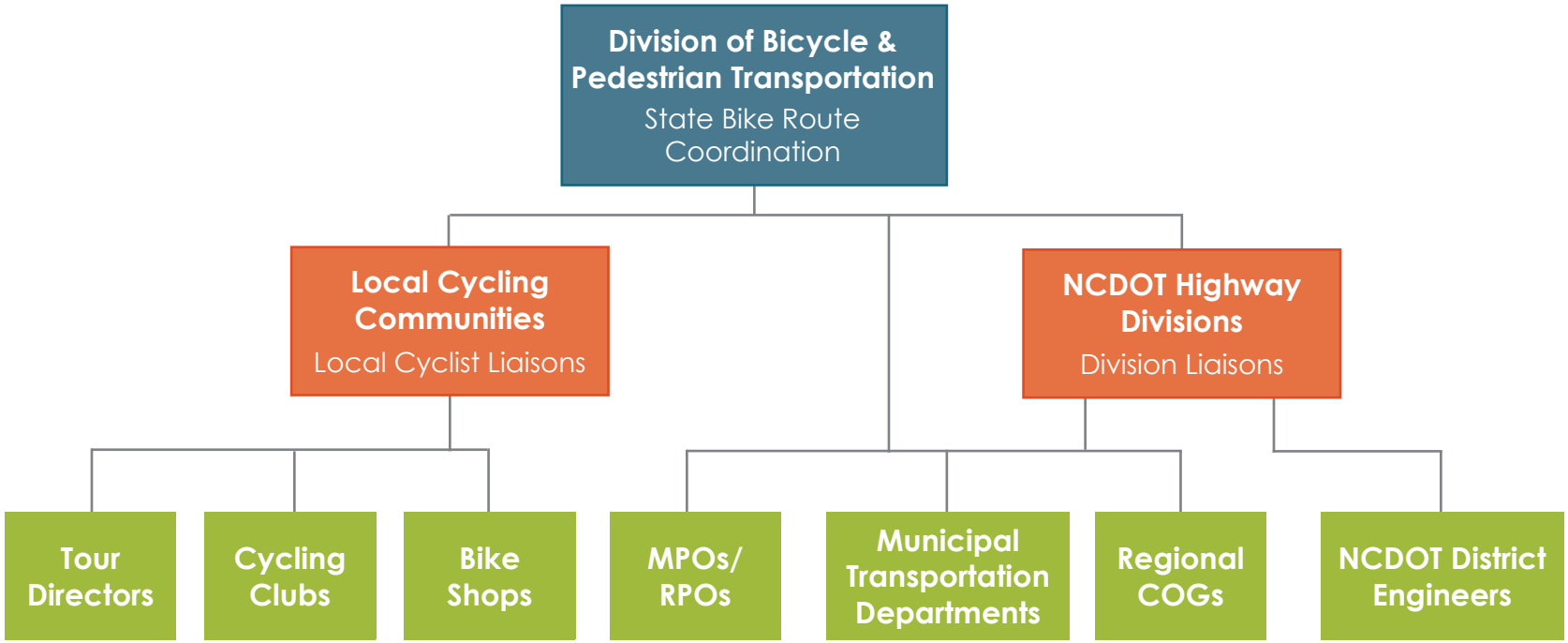
Improving North Carolina's state bicycle routes can have a measurable, positive impact on bicycle safety. Bicycle crash data can be displayed on top of the proposed routes to determine high priority corridors that improve the safety of the state bicycle route system. For example, there were 11 bicycle crashes along US 421 (State Bike Route #3) in Carolina Beach from 2007-2011 (see map at left). As described in Chapter 4, the addition of bicycle lanes creates a 36% reduction in bicycle crashes (FHWA). In addition, other research shows similar positive impacts for the addition of paved shoulders, sharrows, protected bicycle lanes, and cycle tracks. NCDOT should consider making improvements first along priority state bike routes indicated in this appendix and where high incidences of crashes occur.

IMPLEMENTATION OF STATE BIKE ROUTE UPDATES

Administrative Framework

Local experts including cyclists, planners, bicycle shop owners, bicycle tour directors, and many others provided invaluable input that guided the recommendations of this chapter. Continuing communication with these local experts throughout North Carolina is critical to the maintenance of a high-quality statewide bicycle route system. As a starting point for implementation, assign state bike route coordination responsibilities within the Division of Bicycle and Pedestrian Transportation (DBPT).

DBPT should then identify a point person in the bicycling community within each NCDOT highway division to act as a local cyclist liaison for that division. This can be the president of a bicycle club, bike shop owner, avid cyclist, or other involved person or organization in the area. This person can be a direct link to on-the-ground cycling conditions and communicate regularly with the cycling community. Similarly, the DBPT should identify a liaison within each NCDOT highway division itself. Because state bike routes cross NCDOT highway division lines, cooperation and communication across NCDOT highway divisions will be critical. Upon acceptance of their roles, these liaisons will play important roles in driving implementation.

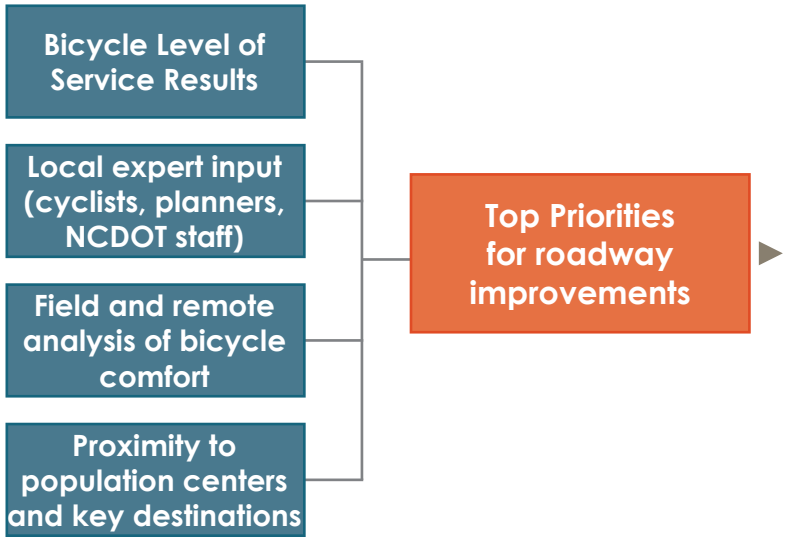


Prioritization of Facility Improvements

95% of the portion of the current statewide bicycle route system lying along roads with traffic volumes of 750 ADT or greater does not have paved shoulders of 5 feet or greater. Given the scope of additions necessary to meet the goal stated above, the policy recommendations of this chapter will play a critical role in ensuring that state bike routes are improved as roadways are repaved or rebuilt. Certain improvements should take place as stand-alone projects as well, however, to address critical pinch points in the system. These projects should be prioritized with the following process.

SHORT TERM IMPROVEMENTS (2017)

First, the top priorities identified through this planning process should be implemented where feasible. Top priority projects are summarized in the following table. These priority projects were selected using several inputs.



Route	Road(s)	Location
US 1	Carpenter Pond Rd and Davis Dr	North Raleigh
US 1	Charlotte Ave and Carthage St	Downtown Sanford
NC 2B	Haywood St	Asheville
NC 2B	Tunnel Rd, US 70, and Swannanoa River Rd heading east from Asheville	Asheville, Buncombe County
NC 2B	Downtown Winston-Salem including S Main St	Winston-Salem
NC 2B	Lexington Ave	High Point
NC 2B	Market St, McConnell Rd, and Alamance Church Rd	Greensboro
NC 2C	Old Greensboro Rd, Mountain St, and W Market St	Winston-Salem, Kernersville, Greensboro
NC 2B	Old NC 86	Calvander, Carrboro - between Dairyland Rd and Hillsborough Rd
NC 2	Old River Rd	Northwest of Greenville
NC 2B	Raleigh Rd/NC Rt 54, Barbee Chapel Rd, and Stagecoach Rd	
NC 2C	Erwin Rd	Chapel Hill to Durham
NC 2C	Davis Dr, Aviation Pkwy, Evans Rd, and Trinity Rd	Durham to Raleigh
NC 3	NC Rt 32	Edenton area
NC 3	Albemarle Sound Bridge - NC Rt 32	Edenton to Plymouth
NC 3	Long Ridge Rd	Plymouth to Bath
NC 3	N 23rd St, S 5th St, 17th St, Independence Blvd, River Rd, Carolina Beach Rd Bridge	Wilmington to Carolina Beach
NC 3	NC Rt 211	Brunswick County
NC 4	Halls Creek Rd, Four Forks Rd, Pitts Chapel toward Elizabeth City	Hertford to Elizabeth City
NC 4	Camden Causeway/US 158, NC Rt 34, US 168	Elizabeth City to Currituck

Route	Road(s)	Location
NC 5	Entire section from Apex to Angier	Apex to Angier
NC 5	US 421	Wilmington to the northwest
NC 5	N 3rd St, S 5th St, 17th St, Independence Blvd, River Rd, Carolina Beach Rd Bridge	Wilmington to Carolina Beach
NC 6	Between NC Rt 16 and NC Rt 49 - northwest Charlotte Area to northeast Charlotte Area	Charlotte area
NC 6 B	Gaston Country through downtown Charlotte generally	Charlotte area
NC 6	NC Rt 24/27 section and bridge over the Pee Dee River	east of Albemarle
NC 7	Neuse Blvd	Downtown New Bern
NC 7	Carey Rd, NC Rt 258	Kinston
NC 7	US 17/NC Rt 55 bridge over the Neuse River	New Bern
NC 8	S Main St, NC Rt 225, and US 176	Hendersonville to Saluda
NC 10	Glenn Ave, Old Rural Hall Rd, Old Hollow Rd, and Baux Mountain Rd	VA border to Winston-Salem
NC 10	US 158 and Yanceyville Rd	VA border to Greensboro
NC 10	S Main St, Leonard Rd, NC Rt 8	Winston-Salem heading south
NC 10	W Market St in Greensboro; Between High Point and Thomasville - NC Rt 68; Burton Ave; another section of NC Rt 68; National Hwy; Unity St; and Salem St (downtown); Between Thomasville and Lexington - highlight roads, especially at the entrance/exit of Thomasville and Lexington (Lexington Ave out of Thomasville, Rt 8/Main St in downtown Lexington)	Greensboro to Lexington
NC 10	Prioritize all of the following: From Pineville to downtown Charlotte - North Polk St/ South Blvd near Pineville, England St, Hebron St, College St through downtown; Downtown to Concord - N Davidson St, Dinglewood/Eastway Dr intersection, Eastway Dr, Old Concord Rd, Grier Rd, Rocky River Rd, Roberta, and Old Charlotte	Charlotte area - Concord to the SC border
NC 11	Brevard/Haywood Rd	Hendersonville to Asheville
NC 11	Broadway and Riverside Dr heading north out of Asheville; 19E in the Burnsville area; Old Mars Hill Hwy north of Weaverville in addition to Weaverville thru-roads.	Asheville through Weaverville
NC 11	US 19E	Burnsville to Spruce Pine
NC 11	King St through downtown Boone and NC Rt 194	Boone and north of Boone
TN Conn.	US 441 and US 19	Waynesville area through the Smokies

◀ *Top Priorities for roadway improvements continued*

MID-TERM IMPROVEMENTS (2020)

In addition to the top priority projects, specific segments were highlighted for facility improvements throughout this chapter. These were identified using a similar approach as that used to select top priority projects, and should be considered the next block of improvements for implementation.

Significant to these types of projects are bridge improvements, which may not be feasible in the short-term. Certain bridges that must be utilized as part of the state bike route system provide very low level of bicycle service (i.e.: the US 17 bridge connecting New Bern and Bridgeton; the NC 32/94 bridge over the Albemarle Sound; the NC 73 bridge south of Lake Norman; and the NC 24/27 bridge connecting into Uwharrie National Forest). Paved shoulders and appropriate railing heights should be essential components of future bridge improvement as soon as resources are available.

The NC 32/94 (Haughton Rd) bridge over Albemarle Sound has low railings and limited shoulder

LONG-TERM IMPROVEMENTS (2030)

In the long-term, the DBPT team should continue to monitor system quality and communicate areas in need of improvement to responsible agencies. Ongoing communication with division and local cyclist liaisons will be critical to continuous maintenance and improvement of the system. The following resources should be maintained and used in this long-term process:

1. Maintain a website and standardized comment form allowing the general public to highlight areas needing attention. This website should also house the reporting feature for missing signs. All comments will be collected by DBPT and reported to the appropriate liaisons.

2. Update the Bicycle Level of Service analysis periodically as data is updated and new data is collected – After each update, Identify the worst segments based on BLOS results. Examine the input variables to determine why each section is receiving a low score.

3. Hold semi-annual meetings with liaisons to check on the status of improvements to priority segments and communicate the findings of Numbers 1 and 2. Re-prioritize outstanding projects accordingly. Discuss funding options at these meetings and coordinate with other stakeholders as appropriate.

During long-term implementation, the cities and areas of higher population should continue to be prioritized over other segments that are identified through the BLOS or public feedback. These are areas of the current route system needing the most attention (i.e. northern Charlotte, the Triangle, the Triad, etc). As cities and towns around North Carolina have expanded without incorporating bicycle facilities, these sections have become unsuitable and are therefore avoided and distrusted by local cyclists. Many recreational cyclists drive to rural areas to safely enjoy a bicycle ride, rather than using closer routes. These difficult sections in high population areas do not advertise state bicycle routes well. If these areas are improved and enhanced with new business routes, it will allow cyclists to commute across town, connect to beautiful country routes, and generally rely on the statewide bicycle route system as a viable means of transportation, recreation, and adventure.

Action Steps

The action steps table below summarizes the implementation steps described in this section along with responsible agencies and time frames.

Action Step	Lead	Support	Details	Timeframe
Designate State Bike Route coordination responsibilities	NCDOT Division of Bicycle & Pedestrian Transportation		Establish State Bike Route coordination responsibilities within the Division of Bicycle & Pedestrian Transportation.	Short-Term (2013)
Identify local cyclist liaisons	NCDOT Division of Bicycle & Pedestrian Transportation	Bike shops, Cycling Clubs, Tour Directors, Local Cyclists	Identify a point person within the local cycling community of each division to help guide priority planning	Short-Term (2013)
Identify division state bike route liaisons	NCDOT Division of Bicycle & Pedestrian Transportation	NCDOT Highway Divisions	Identify a point person within the staff of each highway division to help guide priority planning and advocate for improvements to the state bike route system at the division and district levels.	Short-Term (2013)
Establish website	NCDOT Division of Bicycle & Pedestrian Transportation	Local cyclist and division liaisons,	Establish a website displaying the new route system and provide online comment forms for ongoing feedback.	Short-Term (2014)
Communicate top priority projects and identify funding sources	NCDOT Division of Bicycle & Pedestrian Transportation	NCDOT Highway Divisions, Municipal Transportation Departments, MPOs/RPOs, COGs	Identify roadway ownership for each top priority project and communicate projects to the responsible agency. Identify funding sources for projects.	Short-Term (2014)
Finalize signage design	NCDOT Division of Bicycle & Pedestrian Transportation	Local cyclist and division liaisons,	Establish design details for the signage system, building on the recommendations of this plan.	Short-Term (2014)
Generate signage implementation plans	NCDOT Highway Divisions	NCDOT Division of Bicycle & Pedestrian Transportation, Local Cyclist Liaisons, Municipal Transportation Departments	Establish signage plans and associated implementation timelines for each division based on the guidelines recommended in this chapter. Confirm destinations with state bike route coordinator and local cyclist liaisons.	Short-Term (2014)
Modify resurfacing/ reconstruction policy	NCDOT Highway Divisions	NCDOT Division of Bicycle & Pedestrian Transportation	Require the addition of a paved shoulder with any reconstruction or resurfacing project along a designated state, regional, county, or local bike route.	Short Term/ Ongoing (2014)
Introduce legislation requiring bicycle facilities as part of highway safety improvements	NCDOT Division of Bicycle & Pedestrian Transportation	NCDOT Highway Divisions	With the support of NC's Complete Streets Policy and highway safety improvement goals, introduce legislation that requires the inclusion of 5' paved shoulders moving forward on all roadways with ADT 1,200 or greater.	Short-Term (2014)
Address Amtrak bike policy	NCDOT Division of Bicycle & Pedestrian Transportation		Work with Amtrak to allow bicycles on all trains in North Carolina.	Short-Term (2014)

Action Step	Lead	Support	Details	Timeframe
Implement Signage of new route system	NCDOT Highway Divisions	NCDOT Division of Bicycle & Pedestrian Transportation, Municipal Transportation Departments	Implement signage plans. Aim to create a fully signed system by 2015 (sign new segments, remove signage at eliminated segments, and fill in missing signage). Aim to create a fully signed system with all new signage by 2017 (replace all existing signs along route segments that were retained with improved signage based on new design standards). When signage is placed along routes recommended for improvement before those improvements are implemented, post warnings and clear information on the wesbite to notify users.	Short-Term (2015-2017)
Develop downloadable printer friendly route guides	NCDOT Division of Bicycle & Pedestrian Transportation	Local cyclist and division liaisons	After sufficient signing has been completed, develop updated route maps based on best practices outlined in this chapter. Make available, downloadable printer friendly PDFs on state bike route website.	Short-Term (2015)
Develop smartphone application	NCDOT Division of Bicycle & Pedestrian Transportation	Software developer	Develop smartphone application/smartphone friendly map display and information on state bike routes	Short-term (2015-2016)
Build top priority projects	NCDOT Highway Divisions, Municipal Transportation Departments	NCDOT Division of Bicycle & Pedestrian Transportation, MPOs/ RPOs	Complete roadway improvements on top priority segments of the route system.	Short-Term (2017)
Re-evaluate priorities	NCDOT Division of Bicycle & Pedestrian Transportation	Local cyclist and division liaisons	Re-evaluate remaining priorities based on updated Bicycle Level of Service analysis and public input through the website.	Ongoing (semi-annual meetings)
Complete recommended priority improvements	NCDOT Highway Divisions, Municipal Transportation Departments	NCDOT Division of Bicycle & Pedestrian Transportation, MPOs/ RPOs	Complete roadway improvements on the remainder of the segments identified in the column 'Improvement Sections' throughout this chapter.	Mid-Term (2020)
Complete improvements to full system	NCDOT Highway Divisions	NCDOT Division of Bicycle & Pedestrian Transportation	Complete 5' minimum shoulder on all bike route segments with ADT over 1,200.	Long-Term (2030)

Endnotes

1. Service levels were calculated using the model described in the National Cooperative Highway Research Program's Report 616. The model is based on empirical research and has been applied in bicycle route system development at the city, county, and state levels.
2. Levels of service shown can generally be assumed to be low estimates relative to those calculated elsewhere, since paved shoulder width data were not available and were therefore assumed to be zero in most places.
3. http://www.mwcog.org/uploads/committee-documents/t1dZW1k20070516090831.pdf
4. http://www.smartgrowthamerica.org/complete-streets/changing-policy/model-policy/model-state-legislation-options/